BUNGALOWS

The Bancroft Library

University of California • Berkeley

Gift of

Elliot Evans

Chas. S. Sawyer

August 25. 1911

Digitized by the Internet Archive
in 2007 with funding from
Microsoft Corporation

http://www.archive.org/details/bungalowstheirde00saylrich

BUNGALOWS

Plan on page 61; other views, pages 9, 46, 61

Myron Hunt & Elmer Grey, architects

The C. W. Robertson home, Nordhoff, Cal., is not a bungalow according to our definition of the term, for there are bedrooms in the upper story. It is, however, one of the most successful adaptations from the Swiss châlet type in the United States, and is particularly harmonious in its setting

BUNGALOWS

THEIR DESIGN, CONSTRUCTION AND FURNISHING, WITH SUGGESTIONS ALSO FOR CAMPS, SUMMER HOMES AND COTTAGES OF SIMILAR CHARACTER

Illustrated by photographs and plans

BY

HENRY H. SAYLOR

NEW YORK
McBRIDE, WINSTON & COMPANY
1911

COPYRIGHT, 1911, BY
McBRIDE, WINSTON & CO.

First Edition
Printed April, 1911

To R. M. McB.,
in grateful recognition of an
unfailing source of energy and
enthusiasm, the author dedi-
cates this book

CONTENTS

			PAGE
"Bungal-Ode," by Burgess Johnson			2
Chapter	I	Introduction	5
Chapter	II	Bungalow Types	19
Chapter	III	Bungalows for the Seacoast, Woods and Hills	47
Chapter	IV	The Plan	63
Chapter	V	Foundations	87
Chapter	VI	Wall Materials	95
Chapter	VII	Roofing Materials	109
Chapter	VIII	Interior Finish	117
Chapter	IX	The Fireplace	135
Chapter	X	Furniture and Furnishing	149
Chapter	XI	Lighting Systems	159
Chapter	XII	Water Supply	164
Chapter	XIII	Sewage Disposal	169
Chapter	XIV	Planting	173
Index			189

A List of the Bungalows Illustrated

The home of Mr. O. W. Robertson, Nordhoff, Cal ..... *Frontispiece*

PAGE

The bungalow of Mr. J. Acker Hays, architect, Fort Montgomery, N. Y. 6

The bungalow of Mr. Milton Wilson, Ravinia, Ill..... 8

A shingled bungalow at Burlingame, Cal 9

The Haynes House, on the Massachusetts coast..... 11

The Lindsay bungalow at Altadena, Cal..... 12

An Adirondack lodge on Lake Wilbert, Franklin County, N. Y..... 13

The Fitzgerald bungalow at Duarte, Cal..... 18

The bungalow community of St. Francis Court, Pasadena, Cal..... 20

The bungalow of Mrs. J. A. Hobert, South Pasadena, Cal..... 26

The patio bungalow of Mrs. James M. Codman, Wareham, Mass..... 27

The bungalow of Mr. Francis W. Wilson, architect, Santa Barbara, Cal... 29

The home of Mr. J. B. Strongman, Westboro, Mass..... 32

A tent-house..... 33

A type of vacation home in the Catskills..... 34

A small Southern California bungalow..... 35

A tent-house of Southern California..... 35

The Lodge, Compton, near Philadelphia, Pa..... 36

A summer bungalow at Brightwaters, Bay Shore, L. I..... 37

A small tent-house in California..... 38

A small temporary home in California..... 39

The bungalow of Mrs. Aitken, Maywood, Ill..... 40

The home of Mr. F. L. Milliken, Kenberma, Mass..... 42

PAGE

The home of Mr. W. B. Walker, Hamilton, Mass. 43

A two-story log shack 44

A two-story house of the "Chicago School" 45

A New England seacoast bungalow 48

Porch of the T. C. Hollander bungalow, Misery Island, Mass. 48

A bungalow at Brightwaters, Bayshore, L. I. 49

A two-story Massachusetts coast home built along bungalow lines 49

Cement bungalows in Santa Domingo 50

The bungalow of Mr. H. M. Stewart, Ravonah Park, N. Y. 51

A camp at Blue Mountain Lake, N. Y. 52

A shingled bungalow at Belle Terre, L. I. 55

The summer camp of Mr. William P. Hubon, near Salem, Mass. 56

The winter home of Mr. W. A. Childs, Riverside, Cal. 57

The summer home of Mr. Harry Gillett, Gates Mill, Ohio 59

The ranch house of Mr. C. L. Frost, Hollywood, Cal. 59

A bungalow at Belle Terre, L. I., overlooking the Sound 60

A bungalow of Japanese inspiration 60

Typical plan of a bungalow by Edward King, architect 64

The Estabrook bungalow, Oak Park, Ill. 66

A brick and stucco bungalow at Belle Terre, L. I. 68

The bungalow of Mr. Edwin G. Hart, San Marino, Cal. 69

Plan for a bungalow on a narrow lot, by W. E. Allen, architect 73

A stucco bungalow in New England 74

The home of Mr. W. H. Camp, Cranford, N. J. 76

The Putnam bungalow at Ormond Beach, Fla. 78

The porch of Mr. Ernest Thompson Seton's home, Coscob, Conn. 79

The ranch house of Mr. John T. Allen, Hollywood, Cal. 82

PAGE

The porch of Mr. Charles Percy Austin's home, Santa Barbara, Cal..... 84

A dining-porch..... 85

The bungalow of Mr. D. D. Walker, Santa Barbara, Cal..... 86

The bungalow of Mr. Lee A. McConnell, near Pasadena, Cal..... 88

A five-room California bungalow..... 90

A thousand-dollar bungalow in California..... 91

A new England summer home of weathered shingles..... 92

A shingled summer home on brick piers..... 92

The bungalow of Mr. S. P. Austin, Aspinwall, Pa..... 96

A bungalow of rough boards, at Brightwaters, Bayshore, L. I..... 97

The bungalow of Mr. W. B. Littell, Denville, N. J..... 97

The bungalow of Mr. Arturo Bandini, Pasadena, Cal..... 98

A shingled bungalow at Brightwaters, Bayshore, L. I..... 99

A summer home of logs at Metuchen, N. J..... 101

A bunaglow of rough boards at Brightwaters, Bayshore, L. I..... 102

A seven-hundred-dollar California bungalow..... 102

The studio of Mr. Edward L. Fesser, Kensico, N. Y..... 104

A stucco bungalow at Brightwaters, Bayshore, L. I..... 105

A hollow terra cotta tile bungalow..... 106

The bungalow of Count Gustaf Oxenstierna, Huntington Terrace, L. I.... 108

An example of the square-plan roof..... 110

The bungalow of Mr. E. F. W. Sadler, Fort Montgomery, N. Y..... 112

The living-room in Mr. H. P. Benson's bungalow, Danvers, Mass 134

Fireplace in the home of Mr. H. N. Saxton, Jr., Knoxville, Tenn..... 140

Fireplace in the bungalow of Mr. A. H. Veasey, near Haverhill, Mass.... 140

A summer home and its windmill..... 165

The bungalow of Mrs. D. H. Girouard, Altadena, Cal..... 172

A simple clapboarded bungalow behind its rose hedge..... 188

BUNGALOWS

Bungal-Ode

BY BURGESS JOHNSON

There's a jingle in the jungle,
'Neath the juniper and pine,
They are mangling the tangle
Of the underbrush and vine,
And my blood is all a-tingle
At the sound of blow on blow,
As I count each single shingle
On my bosky bungalow.

There's a jingle in the jungle,
I am counting every nail,
And my mind is bungaloaded,
Bungaloping down a trail;
And I dream of every ingle
Where I angle at my ease,
Naught to set my nerves a-jingle,
I may bungle all I please.

From *Good Housekeeping Magazine*, by permission

For I oft get bungalonely
In the mingled human drove,
And I long for bungaloafing
In some bungalotus grove,
In a cooling bung' location
Where no troubling trails intrude,
'Neath some bungalowly rooftree
In east bungalongitude.

Oh, I think with bungaloathing
Of the strangling social swim,
Where they wrangle after bangles
Or for some new-fangled whim;
And I know by bungalogic
That is all my bungalown
That a little bungalotion
Mendeth every mortal moan!

Oh, a man that's bungalonging
For the dingle and the loam
Is a very bungalobster
If he dangles on at home.
Catch the bungalocomotive;
If you cannot face the fee,
Why, a bungaloan 'll do it—
You can borrow it of me!

Chapter I

Introduction

THE term "Bungalow" provides a curious example of how we Americans overwork a word that is euphonious and the meaning of which, because of the word's comparatively recent assimilation into the language, is somewhat uncertain. One hears nearly every type of country or suburban home called a bungalow, provided only that the house is somewhat informal or picturesque in its lines. Someone has facetiously remarked that in the new dictionaries a bungalow should be defined as "a house that looks as if it had been built for less money than it actually cost."

It seems worth while, in view of the popular misconception of the word's actual significance, to look into its derivation with the purpose of finding out just when it may properly be applied and when it is a misnomer.

According to the authorities, a bungalow is a "Bengalese house," but it is not the typical native's home in India. These are of an entirely different type from our conception of the word. The only bungalows to be seen in India are the "Rest Houses," erected by the English government along the main roads of travel. These are inns or hotels, consisting of a large central building divided in the middle by a hall separating large rooms, with a kitchen in a separate building that is reached through a

Plan on page 7; interior below; fireplace on page 7 *J. Acker Hays, architect*

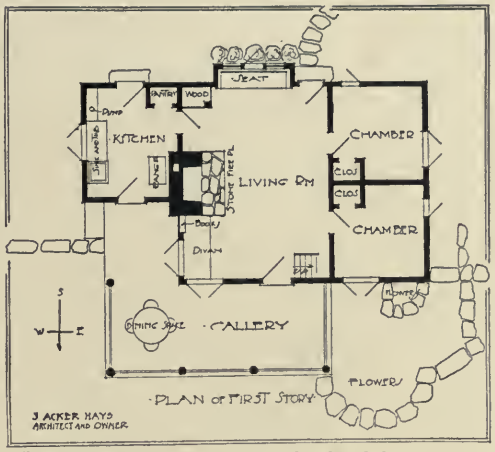
Mr. Hays has used rough boards, battened on the outside, in the walls of his bungalow. The roof is covered with a rubber-like preparation obtainable in rolls and he has turned this down over the edges of the roof to soften the lines

covered passageway. In these Rest Houses the bedrooms are in still another adjoining structure, always a long low building with the bed-chambers opening upon a straight corridor. A low, rambling mass, with wide verandas, overhanging eaves, floors of stone or concrete and single-story construction, are the characteristics of the true Indian bungalow. There is never a second story, never dormer windows to break the long simple roof planes that appear to come

Plan and fireplace on page 7; exterior above *J. Acker Hays, architect*

In the living-room the studding of the walls is left uncovered. Mr. Hays has made the main window of his living-room an interesting feature by the use of rectangular leading with a single panel of colored glass

down, particularly at the ends or corners, nearly to the ground.



Exterior and interior on page 6; fireplace below

The Hays bungalow is limited to the mere essentials in plan. The gallery porch is used whenever possible as the outdoor dining-room

In adapting this type of building to our own needs, we realize at the very outset that there are two forces working against the adoption of the true bungalow characteristics. One of these is the element of cost; a building with all its rooms upon the ground floor is the most expensive kind to build. There is more wall surface and roof area in proportion to the enclosed space than in a building of two or more stories. Then, too, there is a common prejudice against having our bedrooms on the ground level, particularly since we do not have to contend with the burning heat of India. There the deep air space enclosed in the roof above low ceilings is a necessary protection against the sun. With us the air space above even the second-story rooms is sufficient for protective purposes, this being about six or eight feet high in a bungalow that is twenty-five or thirty feet wide. When we meet the problem of lighting and ventilating these bedrooms, however, the main difficulty of adapting the bungalow

Plan above; exterior and interior on page 6

Mr. Hays' bungalow takes its name "Barsden" from the curious keystone of the fireplace arch, closely resembling a bear's head

Plan on page 72

Tallmadge & Watson, architects

Mr. Milton Watson's bungalow at Ravinia, Ill., indicates by the employment of more durable materials and finish that it is used as a permanent home. An excellent example of the "Chicago School"

type becomes apparent. With the addition of dormer windows the attractive simplicity of the roof is at once spoiled. To secure head-room in the bedrooms the whole roof must be raised, and with this change the building loses at once its similarity to the real bungalow. So if we are to be free to call our summer home a bungalow it should have all of its rooms on the ground floor.

Granting, then, that our bungalow shall be a one-story affair—or at least that any space on an upper floor shall be of minor importance, without the necessity for much outside light, let us look into the matter of planning the main floor. Simple as a bungalow appears outwardly, an economical arrangement of living-room, dining-room, service and bedrooms, with means of ready intercommunication, is not easily accomplished. The first rough draft of our floor plan will probably reveal the fact that we are wasting twenty-five per cent. of the whole area in hall space. As has been said above, the true Indian bungalow usually has its bedrooms strung along a long straight corridor. While that is to be ex-

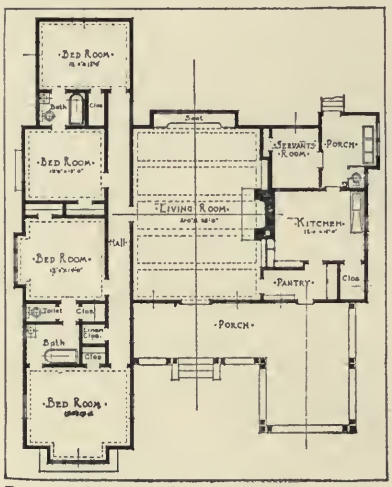
See also Frontispiece and pp. 46, 61
Myron Hunt & Elmer Grey, architects

The characteristic ornament of the Swiss châlet type—sawed-out eaves boards and balcony railing

pected in a hotel, it is assuredly not desirable in a private dwelling. It is a difficult matter to lay down any hard-and-fast rules for bungalow planning, but I think it will usually be found that

Plan below; porch on page 70 *Sylvain Schnaittacher, architect*

A shingled bungalow at Burlingame, Cal., which cost, with barn and outbuildings, $10,500



Exterior above; porch on page 70
Sylvain Schnaittacher, architect

An excellent example of the central living-room type where the sleeping quarters are reached by a single door from the living-room

an arrangement providing for a large living-room or hall extending through the middle of the building from front to rear, from which open at both sides the bedrooms and dining-room, with the kitchen and service portion extending out beyond the latter, will form an excellent basis upon which to develop the final layout. With this scheme the bathroom, or bathrooms, may offer some difficulty, though these may probably be planned to come between two adjacent bedrooms, opening into each. This matter,

however, will be discussed in greater detail in the chapter on planning.

The piazza, of course, is one of the essentials, but it will be well to provide for this so that it will not darken too much of the interior. Usually there is no great objection in having it cross the bedroom windows, since these rooms are not required to be so bright. In the typical arrangement that has been suggested, the piazza could be carried across the entire front or rear, as the exigencies of the land may require, its roof being broken, in the space adjoining the living-room, by a section of uncovered rafters in a sort of pergola motive, upon which not-too-enthusiastic vines may be allowed to climb.

As to the materials of which the bungalow shall be built, there is a fairly wide choice—shingles, cement, field-stone, logs, slabs on an ordinary stud frame, or even common rough boards, overlapping if nailed horizontally to the framework, or

There is an excellent suggestion here in the Haynes house for a method of building porches that will not cut off light from the most important rooms of the house. The framework may be covered by a roll awning when desired

Interiors on pages 126, 127

The Lindsay bungalow at Altadena, Cal., is a typical example of the home—sometimes temporary, sometimes permanent—that is found throughout that land of marvelous climate

battened with narrow strips if put on vertically from sill to roof-plate.

Logs, while undoubtedly picturesque and harmonious with the informal character of the building, are usually unsatisfactory. Their use requires skilled and experienced labor and, even when

Exteriors pp. 39, 94, 100, 111, 153; interiors pp. 118, 148, 150, 152. Davis, McGrath & Shepard, architects
The typical Adirondack lodge, this particular example being on Lake Wilbert, Franklin County, N. Y. The structure is of smooth logs with plastered chinks

Plan on page 77 (No. 11) *Sylvanus Marston, architect*

One of the interesting buildings in the bungalow community called St. Francis Court, Pasadena, Cal. Here again the open-roof porch is cleverly introduced

well put together, they are apt to give trouble after a year or so, through the visitation of borers that get under the bark and start decay. Slabs, which are the first cuts from the four sides of a log, are usually obtainable at a very low cost if there is a saw-mill within convenient reach. These are nailed to the outside of a common stud frame, horizontally, the width of the "chinks" between adjacent slabs being kept fairly narrow by alternating the butt ends. If the studding is to be sheathed on the inside there need be no attempt to caulk these chinks tightly, but if no inside finish is planned, the wall can be made reasonably tight by putting the slabs on a preliminary outside sheathing of the roughest sort of unplaned boards. These, of course, should run at right angles to the length of the slabs. Still another method of making tight a slab wall is described in the following pages, in which instance strips of wire mesh were tacked over the backs of the joints to support a caulking of cement-and-hair mortar. The inside of the studding was then covered with a slab wainscot of birch with a rough fabric, such as burlap, above it.

Shingles, siding or rough boarding offer no special difficulties in construction, and these materials may either be left to weather

The walls are finished with a perfectly plain wainscoting of cypress, above which burlap is used between the upright strips under the boxed ceiling beams

to a silvery gray or stained with one of the readily obtainable shingle stains.

When we come to the matter of the inside finish, there is opened up a great field for the expression of individuality. Even though the bungalow must be kept down to the bare essentials, with no covering at all for the stud frame, there is an opportunity for avoiding the commonplace merely in the carefully studied spacing of the studs or upright members. Do not be content to have these appear just as the carpenter finds it convenient to place them; have them symmetrically spaced on either side of center openings, with the horizontal member forming the window-sills carried all the way around. Then, too, if the slight additional expense be permitted, the studding may be covered with pulp-board or compo-board, a comparatively thin but rigid material that may be painted or, better still, covered with a rough fabric in cool gray, apple green or a pleasing shade of brown.

If the bungalow walls are built of one of the more substantial

Other interiors on pages 119, 133; exterior on page 98

Large cobblestones have been used in this fireplace facing and scattered through the cement hearth. The hob, constructed of one large projecting stone, is noteworthy. The door at the left harmonizes particularly well with the rough battened walls

materials, such as cement, there are great possibilities in working out interesting surface textures for the interior, with the use of inset tiles to gain the desired spots of color. But more of all this in the following chapters.

No bungalow is worthy of the name without at least one big

fireplace for the living-room, and if additional ones may be built in the bedrooms, so much the better—these will be fully appreciated in early spring and late fall. Stonework seems to harmonize best with wooden walls for the chimneys and breasts, and rough brick, tile or cement, if the latter material is employed throughout the building. In any case make sure that the fireplace and its flue are built along scientifically correct lines—a fireplace that smokes is of less real practical value than a gas-log.

Just a word regarding foundations. With walls of concrete, stone or brick, the foundation underpinning will, of course, have to be of concrete or stone, carried to bedrock or to a solid footing below the frost-line. With bungalows of wooden construction considerable expense may be saved by building on piers of masonry or even on locust posts that are set well into the ground, resting upon a broad flat stone footing. If this form of foundation is chosen be sure that the sill girders, set on the posts for the support of uprights and floor joists, are as near the ground as convenient. The space between the posts should be latticed. In other words, keep the building low down on the ground if it is to merit the title of bungalow.

The Fitzgerald bungalow at Duarte, Cal., is situated in a magnificent stretch of country in the San Gabriel Valley, having for its background the Sierra Madre Mountains

Chapter II

Bungalow Types

FOR the purpose of our present discussion we may divide American bungalows into ten types A clear-cut classification of any sort of buildings is difficult and liable to misinterpretation, particularly in America, where the number of types will almost equal the number of examples. There is so much borrowing and blending of important characteristics between the main classes that any attempt at a separation must necessarily be open to criticism.

For the sake of a clearer understanding of the bungalow, however, as it is found in the West, the East, in the mountains and by the seacoasts, the rough division into types that follows, seems worth attempting.

Let us mention first the type of bungalow that is found in great numbers throughout Southern California, particularly in Pasadena and Los Angeles. It is used chiefly as a permanent home, but on account of the ideal climate of that section of the country the permanent home does not have to be so snugly built as the permanent home of the East. This type may be recognized at once by a characteristic use of materials. Redwood shingles or redwood siding, stained dark brown, is practically always found in conjunction with piers, porch posts, underpinning and chimneys of brick. Another earmark is found in

Plan on page 77; individual bungalows on pages 14, 21-25, 130, 142 *Sylvanus Marston, architect*

The footpath entrance to St. Francis Court, Pasadena—a striking instance of the very common use throughout Southern California of rough clinker brick in conjunction with stone work

the use of clinker brick, and sometimes of field-stone, interspersed through the brickwork surface for the sake of variety. While the use of stone in conjunction with brickwork is probably open to criticism on the ground that it is mere affectation, the practice is so common in that section of the country that it must be inseparably linked with the bungalow of this type.

It will be generally admitted, I believe, that the bungalow as a distinct type of architecture is far better suited to employment for the temporary home, the shooting-lodge and the week-end retreat in the woods or along the shore, than it is to use for permanent homes in suburban communities. There is at least a suggestion of following after a mere fad in the building of row upon row of bungalows along a suburban street. In all probability this fad, like others, will die out. At the same time this

criticism cannot be applied directly to the Pasadena and Los Angeles community bungalow in such a pronounced fashion. The climate necessarily has brought about a somewhat different

Plan on page 77; individual bungalows on pages 14, 21-25, 130, 142
Sylvanus Marston, architect

All the bungalows in St. Francis Court are backed up close to the boundary line, along which runs this path by which the tradesmen make their deliveries of supplies

mode of life—a life of which the bungalow is in a manner a true expression. In so far as it is that, it can never be called a fad.

In the East this same practice would undoubtedly be more open to criticism. The climate is not one for which the one-

Plan on page 77; individual bungalows on page2 14, 21-25, 130, 142

Sylvanus Marston, architect

The eleven bungalows in St. Francis Court are grouped around a central court reached through the characteristic entrance gateway in the rough wall of stone and clinker brick

Plan on page 77; individual bungalows on pages 14, 21-25, 130, 142 *Sylvanus Marston, architect*
At the near end of the Court the driveway turns around a fountain which is a very popular gathering place in the late afternoons

story house is ideally fitted, for it must always be borne in mind that the bungalow, with its rambling one-story plan, is difficult to heat.

In connection with this first type it is interesting to study the successful community that is illustrated herewith—an attractive group of bungalows in the outskirts of Pasadena. Owing to its location the land was too valuable to be divided up in the ordinary way into building plots for bungalows. In order to take advantage of its nearness to the business section of Pasadena, the plot, which is but 176 x 305 ft. in total area, has been so divided that eleven bungalows are built upon it. By grouping these around a central open space into which the main entrance driveway runs, with a narrow passageway along the rear side for the butcher and baker, an unusual effect of spaciousness has been obtained for each bungalow home. It will be noticed that the bungalows are all different, not only in exterior appearance but in plan as well, so that there is no lack of individuality. The fountain and shelter at the far end, enclosed by the turn-around of the drive is, I believe, a very popular gathering place in the late afternoon.

Plan on page 77; individual bungalows on pages 14, 21-25, 130, 142

Sylvanus Marston, architect

The whole plot on which the eleven bungalows of St. Francis Court are built is but 176 x 305 ft. Each of the bungalows is unlike any of the others, not only in exterior form but in plan as well

To those who are considering the bungalow in the light of an investment, it may be interesting to know that the real estate company which built and operates this particular group of bungalows has no difficulty in securing a rental by the year of from $1000 to $1500, or, for the winter season from November first to May first, $900 to $1200. The bungalows are rented furnished, equipped with good furniture, Oriental rugs, hangings, silver, linen, kitchen utensils and such things.

There can be no question that the Pasadena and Los Angeles community bungalow is an interesting and distinctive development. Moreover, it is sure to be of value in suggestion to the man who is about to build a bungalow of any kind.

For our second type let us name the patio bungalow that also is found in Southern California. It, of course, is a perfectly natural development from the patio house, where the inner court, made cheerful and cool with growing things and water, was the only available retreat from the hot and dusty plains roundabout. In the original patio house the open court was either

Plan on page 77 (No. 11); front view on page 14 *Sylvanus Marston, architect*

Rough split shingles or shakes are used in several of the bungalows. The white columns add just the necessary touch to brighten the façade

Plan on page 70; other views on page 71

Lester S. Moore, architect

The bungalow of Mrs. J. A. Hobert at South Pasadena, Cal. The walls are of redwood siding stained a dark brown—a material in the possession of which the residents of California are particularly fortunate. Not only is the wood one of the most beautiful to be found in the United States, but in California it is among the cheapest of the building materials. Here again is seen the characteristic striving after variety and novelty of treatment in the brickwork. Small stones are interspersed throughout the surfaces of the porch piers, foundation and chimney. It is a debatable question, however, whether or not they add very much to the architectural merit of the building

Plan on page 28; other views on pages 30, 31

Guy Lowell, architect

A Massachusetts example of the patio bungalow—the summer home of Mrs. James H. Codman at Wareham. The house is unusually large, as the plan will show, and the type necessarily an expensive one to build

completely encircled by the building, or a wall achieved the same end. With the necessity for such complete isolation of the out-door room removed, the bungalow type with its patio is

Exteriors on pages 27, 30, 31; interior, page 30

From the entrance porch shown at the lower part of the plan, one enters the patio at once through a brick-paved hall, finally reaching the living-room at the far end of the building. The porch at the upper left-hand corner is used as an outdoor dining-room

probably more frequently found with one side of the rectangular court open. As the illustrations of patio bungalows show (pages 10, 29, 68, 70, 79), the patio may be on the front

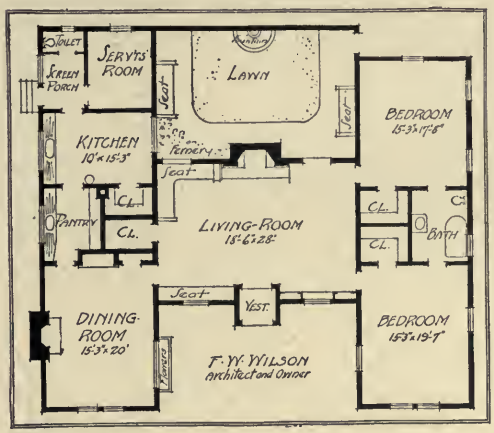
of the plan or in the rear, depending upon the exigencies of site and exposure.

Another distinct type of the bungalow is an adaptation of the

Plan below *Francis W. Wilson, architect*

Mr. Wilson's bungalow is doubly enjoyable in that it has, in addition to the patio in the rear, a still larger space in the front sheltered by the vine-covered pergola motive

Swiss châlet. Most frequently is it to be found on the mountain sides and in the foothills of the West, although the illustration that is shown on page 32 is a New England example. The characteristics are, perhaps, too well known to need mention — the extremely wide overhang of the flat-pitched, two-plane roof, the frequent presence of a balcony in the gable ends, and the use of sawed-out openings between adjacent boards as a means of decoration. The châlet as found in Switzerland is by no means confined to one floor, so that it is not surprising to find the



Exterior above

Another excellent example of the central living-room type of plan, to which is added a walled-in patio at the back

Plan on page 28; other views below and on pages 27, 31 *Guy Lowell, architect*

The broad overhang of the roof gives a deep shadow that is essential in a summer home not protected by large shade trees

Plan on page 28; other views above and on pages 27, 31 *Guy Lowell, architect*

The main entrance is through a brick-paved hall leading directly into the patio

American development of this building making more of the attic than in the true bungalow type.

Still in California, we come to the fourth type in our rather arbitrary classification—the small shack intended only for temporary use. With this group we must include the tent-houses, small portable bungalows and many small camps such as are found more frequently in the East. There is little to learn from the examples shown or, in fact, from any building of this extremely small size and character. There is hardly any serious attempt at real planning—often there are but two rooms, one a living-room, kitchen and dining-room combined, and the other a bedroom. Similar to these temporary shacks in purpose and general character are the tent-houses of Southern California, where the side walls are made of canvas stretched on frames.

Plan on page 28; other views on pages 27, 30 *Guy Lowell architect*

The real heart of the Codman home is the patio—at any hour of the day offering cool shade and the refreshing music of the fountain in the lily-pool

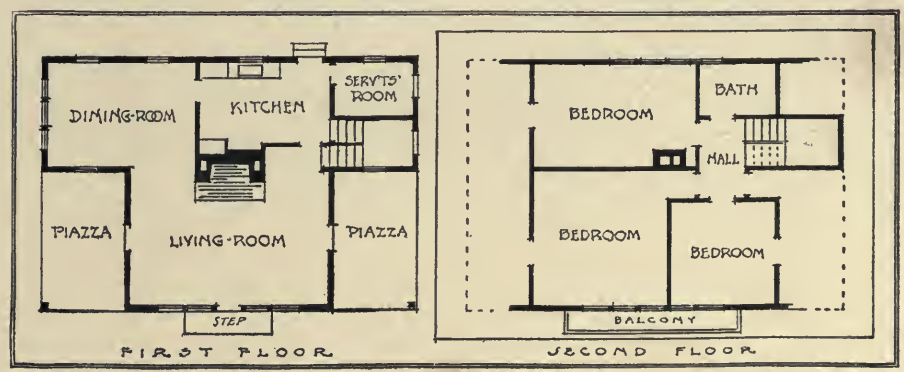
Plan on page 33; interior on page 158

Davis, McGrath & Kiessling, architects

The summer home of Mr. J. B. Strongman, Westboro, Mass., an adaptation of the Swiss châlet. The walls are of unplaned boards, battened on the inside for the lower part and on the outside for the upper story

The tent-house of Southern California has the main portion of its side walls built of canvas stretched on frames. These may be propped open, giving shade and ventilation

These are usually hinged so that the whole building may be thoroughly and quickly ventilated. Needless to say, the tent-house makes an ideal outdoor sleeping-room when arranged for that purpose, but its application to homes intended for other than merely occasional use is necessarily limited.



Exterior on page 32; interior on page 158 *Davis, McGrath & Kiessling, architects*

The Strongman home is in no sense a bungalow, of course, since all its bedrooms are in the upper story. The cost of the building was in the neighborhood of $1500

A type of vacation home that is found in great numbers throughout the East. Too often its plan leaves much to be desired

One of the very simple bungalows used as temporary homes in California—probably little more than a living-room and two bedrooms

Among the portable dwellings are to be found almost every conceivable sort of building, usually of this small size and for temporary use only. You may find portable bungalows in all architectural styles, from half-timber through Colonial to the so-called Craftsman style, and like many other ready-made things they may be convenient and occasionally useful, but they cannot possibly show individuality.

Another example of the tent-house type of summer home. There has been an effort at decorating the canvas by painting under the shelter of the porch

The camps and the smaller shacks of the East show almost as many kinds of structures as there are examples. It is impossible to classify them, even if by so doing we could learn therefrom a lesson or two, which is doubtful.

Another view on page 101

A log structure used as a sort of summer-house on a large estate near Philadelphia. There is but one large room, but it has its fireplace and chimney

Still another class, this time fairly distinct, is the small, unusually picturesque structure that is used as a retreat or perhaps merely as a summer-house in connection with a larger home. The illustration opposite is one of the most interesting of these, built of whole logs and containing its fireplace and chimney like any full-grown bungalow. Here again it is impossible to formulate any distinct class characteristics of this type. The form, plan and materials of such a retreat will vary with every example. It will be found, however, that the suggestions that will naturally offer themselves in a study of the larger buildings may be put to good use in the design and construction of one of these features of the larger country estate.

The next group stands out clearly as a type in the large bungalow family. It is represented by the Adirondack lodge or the summer home in the Catskills, where almost invariably the material used for the walls is whole logs, and where the building is rather elaborate in its plan and equipment. The photograph

James L. Burley, architect

A summer bungalow at Brightwaters, Bay Shore, L. I., where the walls are built of painted clapboards

of the Adirondack lodge shown on the opposite page is an excellent example of the type. Frequently there are many buildings in the establishment, connected by covered passageways. The larger examples of the type are far better known and more accessible than the smaller ones, largely for the reason that they have become almost a fad with many wealthy city men who

There are two rooms and a shower bath in this Southern California tent-house; the cost was about $300

want some sort of a retreat in the woods where they can entertain as freely as in the city.

On the New England coast will be found the next type—the seacoast bungalow. Usually it is a long, low building of shingles or clapboards, although frequently also of stucco, perched high on the coast ledges looking out to sea. As might be expected, the plan is usually extremely long and narrow in order that the rooms may almost without exception be given the benefit of the sea view and breezes. Far different in style are the examples of this type from our Southern California bungalow. There is no hint of the Japanese flavor in mass or detail as we find in the West. Rather will the New England bungalow suggest the logical

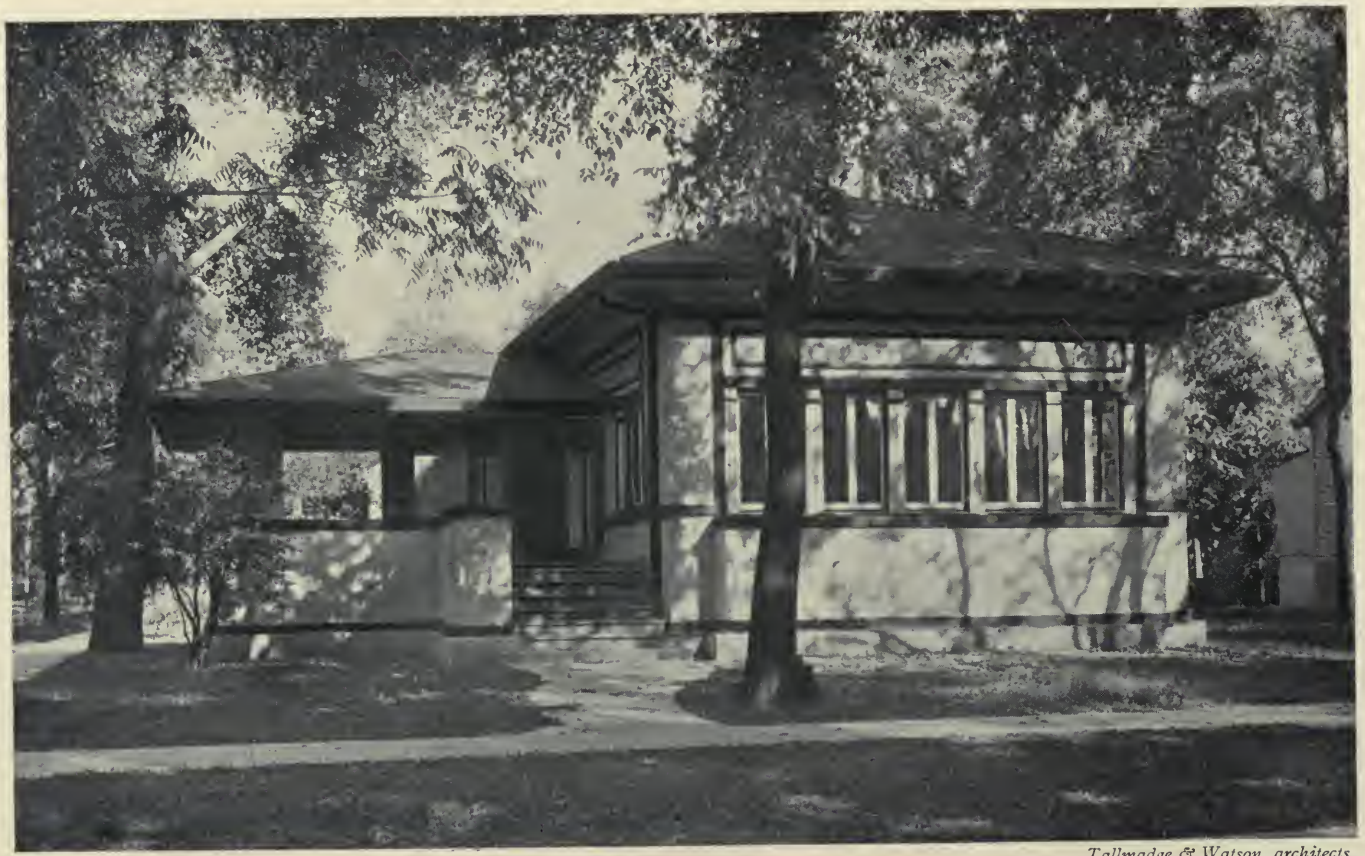
Other exterior views on pages 13, 94, 100, 111, 153
Interiors on pages 118, 148, 150, 152
Davis, McGrath & Shepard, architects

An excellent example of the elaborate Adirondack lodge with its covered passage-way connecting the various buildings of the establishment

one-story development of the Colonial seaport dwellings that have given a distinctive character to the Northeastern United States.

A typical example of the small temporary home in California. The cost was about $800

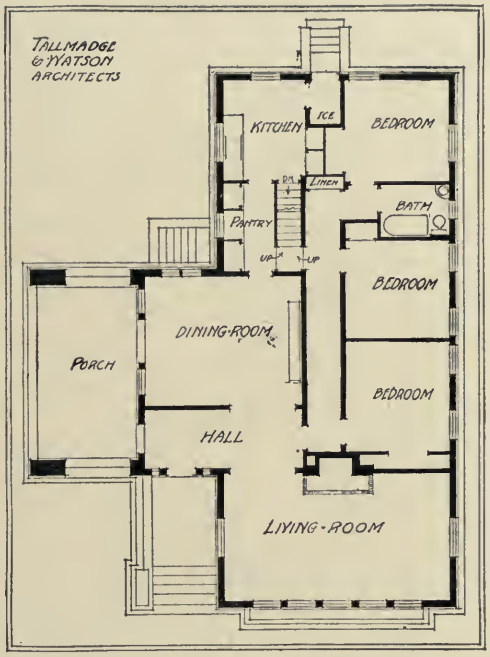
From the New England coast type it is a far cry to the type of bungalow that is represented by the Maywood example shown herewith. It may stand as a certain type of permanent home



Plan on page 41

Tallmadge & Watson, architects

The bungalow of Mrs. Aitken, Maywood, Ill. Another excellent example of the Chicago type of permanent one-story home



Exterior on page 40

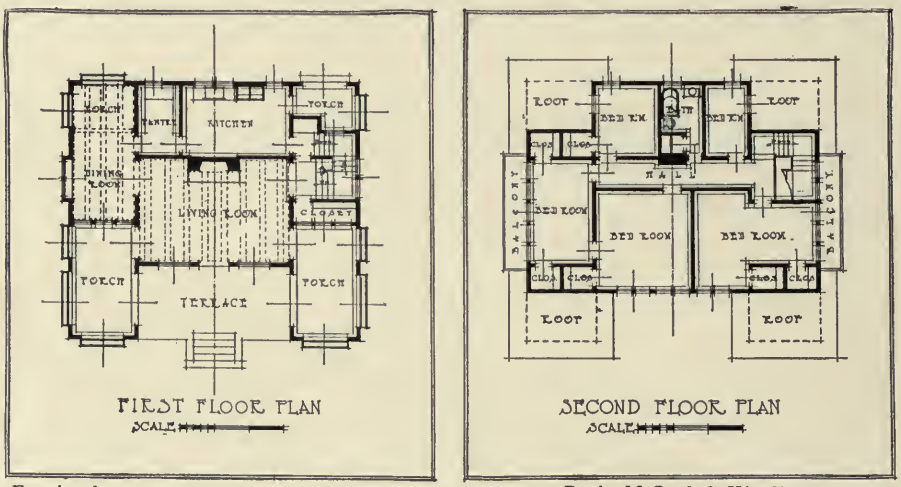
It is interesting to note how the hall, although of very small area, is the junction of the service department, sleeping-quarters, living-room and porch. An excellent plan for a comparatively narrow lot

for the Middle West, developed along the lines of the one-story plan. There is a great deal of character and originality of motive to be found in the work of what has come to be called the "Chicago School" of architects. Their use of the strong horizontal line, as being most in keeping with the flat plains of the Central West, has brought about almost a new style in the architectural types of the world. There is no copying of the bungalow from India in this type. It is the result merely of working out in the most straightforward and rational way the practical necessities of plan where the rooms are to be all on one floor. In other words, this type may be given the name bungalow not because of its descent but simply because it is a one-story house.

To be classed with this Chicago type, if it may be called by that name, there are other local variations of the bungalow intended for use as a permanent home. Usually in these too, the dominating fact is that of the one-story plan rather than the traditional bungalow mass, although this naturally follows to a more or less pronounced extent. In this class as a whole, then, there will be found a perfectly natural tendency towards more elaborate finish, plastering throughout, the use of better woods, better or at least more stable materials for the outside walls and roof, provision for heating, and all the other essentials that belong to the house that is to be used the year round.

Plan below *Davis, McGrath & Kiessling, architects*

A two-story house built along bungalow lines. The upper story is kept as unobtrusive as possible by bringing the roof down low and rounding off the large dormer group of windows



Exterior above *Davis, McGrath & Kiessling, architects*

In a house built along bungalow lines there is necessarily somewhat contracted headroom in the second story. It is surprising in this example to find how much space has been obtained upstairs

Closely associated with this last-mentioned type, and like it in one way, is the house that is not a bungalow, though built along bungalow lines. Built for permanent use throughout the whole twelve months, it abandons the one-story plan while striving to hold fast to the low, snug, earth-hugging mass of the bungalow. Perhaps it should not be included either in our classification or in these pages at all, for the reason that it is in reality not a bungalow at all. With the purpose, however, of making clearer the distinction between a bungalow and a house that is built along bungalow lines, several illustrations of the latter are included in these pages. The plan, of course, will be radically different. None of the principles outlined in the chapter on Plan will apply, for the reason that there is no longer the necessity for keeping distinctly separate on one floor level the sleeping-quarters and the living quarters. The distinction between the true bungalow and this type of structure is rather hard to make. The roof of the house type is frequently brought down close over the tops of the first-story windows and the dormers are subdued

William G. Rantoul, architect

The Walker home at Hamilton, Mass., is another example of the two-story house built along bungalow lines. Bringing down the roof at the corners and cutting off the gable ends help to keep down the apparent height

In the log wall, which may be seen in the lower central portion, it will be noticed that the chinks, instead of being caulked with plaster or some material of that sort, are filled with small saplings wedged into place. Most of the upper portion of the shack is used as a sleeping-porch

by every device known to the designer's skill. From outside it is almost impossible to tell whether the building is a bungalow with dormers ventilating the upper part of its living-room or its

Richard E. Schmidt, Garden & Martin, architects

There is a strong suggestion of the bungalow type in many of the permanent homes of the Middle West, where the horizontal lines and shadows are accented as strongly as possible

attic, or whether it is a house. The final test, however, is in plan. Where the main sleeping-rooms are included on the first floor with the living-room, dining-room and service quarters, the building is a bungalow. Where the sleeping-quarters are for the most part on the second floor, the building is a house instead.

Plan on page 61; other views on pages 9, 46, 61 and frontispiece

Myron Hunt & Elmer Grey, architects

Excellent use has been made of the Swiss châlet characteristics in some of the most attractive summer homes of the West and, to a less extent, in the East

Chapter III

Bungalows for Seacoast, Woods and Hills

IN addition to our rough division of American bungalows into more or less distinct architectural types, it may be helpful to study the main characteristics that belong to the bungalow by reason of its location. We shall find that the structure built to be sheltered by forest trees will be different in some ways from the one that is designed for the flat, sandy site along the coast, and that the home in the hill country will differ from both.

To take up the seacoast bungalow first: its plan, as has been suggested in connection with the discussion of types, will naturally work itself out in a long rectangle rather than a square, owing to the desirability of securing the ocean view and breezes to as many rooms as possible. Then too, this practical tendency towards the long, narrow form of building will coincide nicely with an esthetic consideration—the harmony that a long building paralleling the coast line will naturally give, for a building should always show this compatibility with the main features of its environment.

The materials used in the walls and the general color scheme of the exterior should be influenced also by the long gray stretches of sandy beach. A log structure on a sand bank looking over the sea would be an anomaly. Rather will the long horizontal lines of white-painted clapboards or siding, or the silvery gray

A particularly good example of the seacoast bungalow—where the plan is extremely long, following the line of the shore and giving almost all the rooms the water view

color of shingles, help to secure that intimate relationship between a home and its surroundings that conveys an impression of peace and stability rather than eternal strife and unfitness.

Interior on page 125

William G. Rantoul, architect

For the seacoast bungalow the porch will naturally be long, not only to give better opportunity for the view but also to secure the strong horizontal shadow of the porch roof for the exterior appearance

James L. Burley, architect

Rough hemlock boards overlapping horizontally have been used in this very simple bungalow at Bay Shore, L. I.

As regards the details of construction, there is but one point to mention. Sand offers a perfectly satisfactory support for foundations or pier footings provided it is confined laterally.

A two-story house built along bungalow lines. The kitchen wing is at the right and it is interesting to notice how the windows have been screened by latticework

Antonin Nechodoma, architect

The bungalow has found its way into the tropics, where the coolness of cement walls has naturally been found more agreeable than wood construction. Cement bungalows in Santa Domingo

Do not, therefore, carry the excavation lower at one part of the footings than another, else the sand may tend to flow towards the lower level. Keep the footings at the same depth throughout, and deep enough to prevent any possibility of their being undermined by the action of wind or water.

For the bungalow in the woods the main consideration in planning, aside from the general principles as outlined in the chapter on Plan, will be the necessity for keeping the rooms

Plan on page 53; front view on page 54 *Fred W. Wentworth, architect*

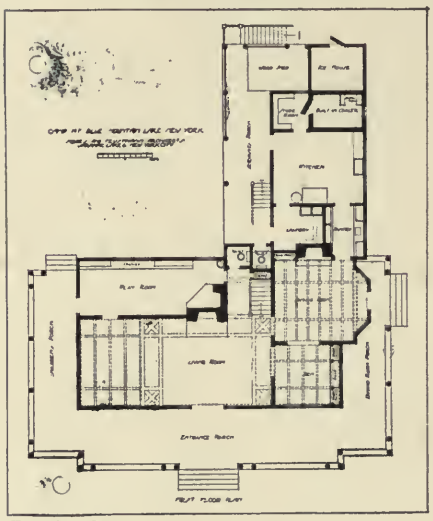
The Stewart bungalow near Liberty, N. Y., cost $1700, built in 1904

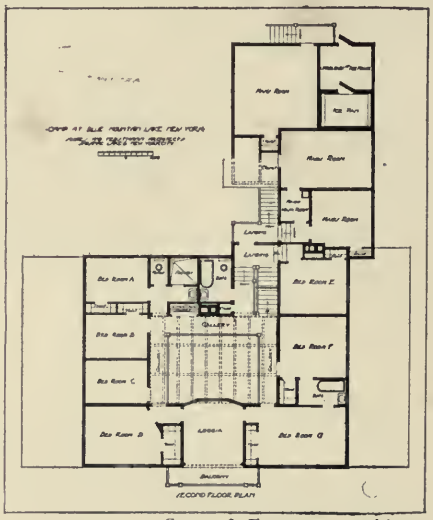
well lighted. The wide porch roof, always a factor operating against this, may possibly be dispensed with altogether. If the trees are high and fairly near the building their shade may suffice for the outdoor room, or it may be sufficiently augmented by the use of awnings over an open frame.

This question of just how close the surrounding trees should be allowed to stand is an important one. Usually the bungalow builder has come to his wood-covered site from a sun-baked city street, and the last thing that would occur to him is the cutting down of any trees, no matter how closely they may hem him in. Yet all the benefit and comfort that a home in the woods can

Plans below *Scopes & Feustmann, architects*

An excellent example of the type of two-story country home that is being built in increasing numbers throughout the mountain country of East and West

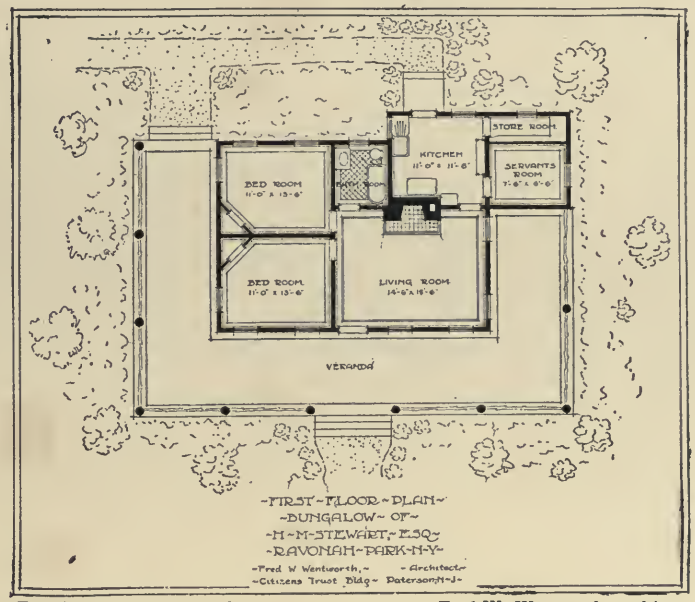




Exterior above *Scopes & Feustmann, architects*

One of the most interesting features of the first floor plan is the large play-room opening off the living-room. The built-in cold-closet at the rear, adjoining the ice-house, is also worthy of note. On the second floor the bedrooms open upon a gallery which looks down upon the living-room

give will be lost if the trees are so thick and so near to the building that they bring continuous dampness. In her excellent work, The Landscape Gardening Book, Miss Tabor has laid down a principle in this regard that is obviously the one to follow. Trees planted about any home should be far enough away to shade the space between them and the house rather than the house itself. It is the sight of shaded surfaces in contrast to



Exteriors on pages 51 and 54 *Fred W. Wentworth, architect*

Mr. Stewart's bungalow has a porch area equal to that of the interior. Where space permits it is better not to have the bathroom opening from the living-room

sunlit ones that is pleasing to our summer senses, not the total absence of sunlight.

On the north side of our bungalow, therefore, let the trees stand as close to the structure as they will, but on the three remaining sides keep them cleared away far enough to let in the sunlight, and incidentally what breezes may be available as well. Moreover such an arrangement will permit the border of shrubs and flowers around the base of the house in the woods, where too often there is nothing but the accumulation of matted leaves.

Here will our house of logs or slabs be in its proper environment, blending with the grays and greens and browns of the surrounding trees. If shingles or siding or rough boards are used for the walls, stain them in one of these quiet somber tones rather than in contrast to the surroundings. When we take up our abode by choice in Nature's own domain we should have the good taste to conform to her general color scheme for the whole

Plan on page 53; other exterior on page 51 *Fred W. Wentworth, architect*

When the bungalow of shingles, siding or rough boards is built in the woods, the walls should by all means be stained on one of the quiet tones that harmonize with the trees

place rather than introduce a blatant note of discord, just to show our independence.

And in addition to these considerations of planning for a bright interior, a satisfying balance of sun and shade, and a harmonious use of materials, all of which show very clearly the distinction between the right thing to do and the wrong one, there is a matter that is far more subtle. It has to do with the design of the bungalow as regards its employment of horizontal and vertical lines. In the case of the seacoast bungalow it is readily apparent that the successful design will show a preponderance of horizontal lines—lines repeating the dominating

reaches of beach and horizon. In the woods, on the other hand, the trees give us the strong note of verticality. With a type of building that is essentially low and flat in its mass, a properly balanced relation with the vertical lines of its environment is not easily secured. Mr. Embury's design for a bungalow at Belle Terre, Long Island, will make clear this point more easily than extended discussion. In it the snug, blanket-like roof mass of the bungalow type is preserved, yet in the most effective use of the numerous porch posts the note of verticality,

Plan on page 75 *Aymar Embury, II., architect*

This shingled bungalow at Belle Terre, L. I., is an excellent example of the subtle harmony that is possible to achieve between the many vertical lines of the trees and the necessarily horizontal lines of the bungalow type

of harmony with the trees, is introduced into the design. Considerations of this kind will inevitably make or mar the design of any bungalow, nor is it to be expected that they may be successfully met by the amateur bungalow builder. Because of its small size, single story and informality, it must not be thought for a moment that the design of a bungalow is too insignificant a matter to need the services of a skilled architect. From what has been said, as well as what remains to be said in the chapters on Plan and Materials, it must be apparent that the problem of designing a really successful bungalow is fully deserving of the utmost skill of a trained architect.

For the bungalow on the hillside or crowning the crest of a

ridge the requirements of plan and general mass are not unlike those that have been mentioned in connection with the coast type. Long and flat in general form, hugging its high and sometimes rocky site, with a plan that gives to most of the rooms the advantages of the view, the successful bungalow on the

Plan on page 57; interiors on pages 80, 81, 136 *William P. Hubon, architect*

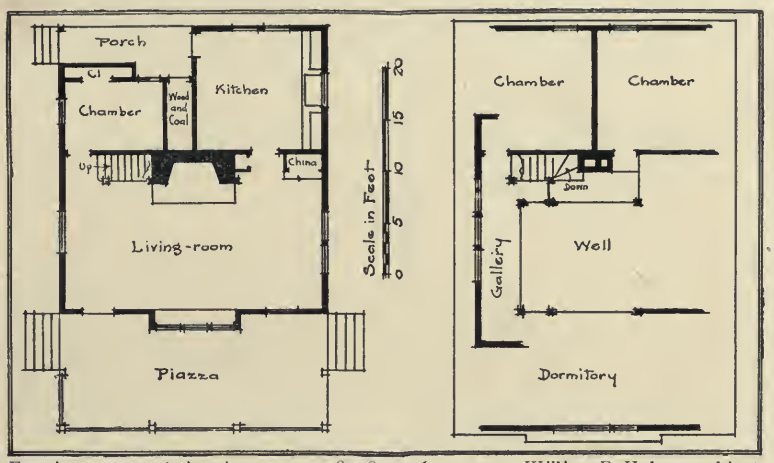
Mr. Hubon's camp near Salem, is said to have been built at a cost of $1100, of shingles that have been allowed to weather

mountain top will differ from its seacoast brother chiefly in the rounding off of the roof ends, instead of the straight horizontal roof ridge. It will often be found a help to locate the porch or porches at the ends of the long rectangular plan, so that the roof over these may be hipped to bring it down as nearly as may be to the ground.

There will be no need, probably, of the open-frame porch roof here—the unobstructed light on the mountain top will find its way into the rooms in sufficient quantities even underneath porch roof and wide overhang of the eaves.

As has been suggested, the Swiss châlet offers an admirable

prototype for assimilation with the true bungalow characteristics of design, chief among which will be the bringing down of the roof ends to tie the building more firmly to its site.

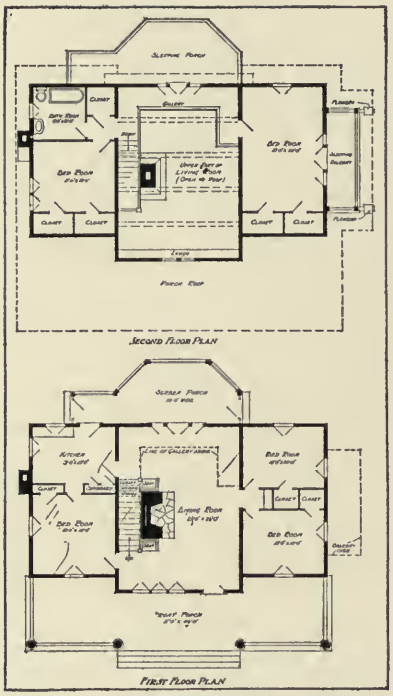


Exterior on page 56; interiors on pages 80, 81, 136 *William P. Hubon, architect*

The living-room of the Hubon home opens up to the roof with a gallery around three sides

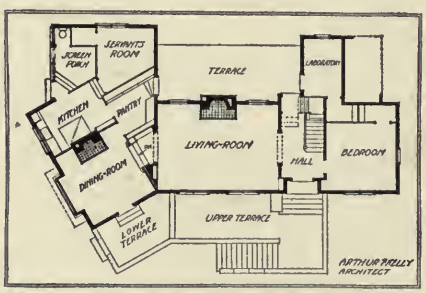
Other exterior views on pages 114, 115; interiors, 145, 151 *Geo. A. Clark & L. du P. Millar, architects*

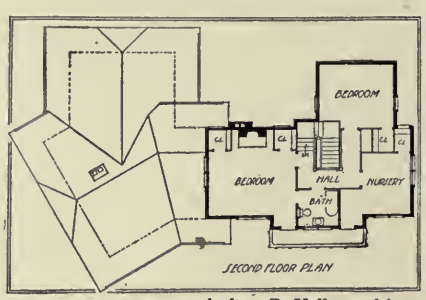
The Childs ranch house is built of split redwood shakes, given a very thin stain of bronze green. The shakes sell in the West for about $20 a thousand and it takes about 150, laid 16 ins. to weather, to the square of 100 ft.



Exterior p. 59 *W. Stillman Dutton, architect*
The Gillette home is notable particularly for the large area of sleeping-porch that it contains on two sides of the house

Where the site chosen is the side of a hill rather than its ridge the difficulties of planning will necessarily be increased. The long rectangular plan will still be found most convenient, in order to keep as unnoticeable as possible the difference in level between floor and ground at the front and at the rear. It may be found necessary to excavate or blast out a ledge of rock on the upper side in order that the front may not be too stilted. Piers will probably not serve as foundations along the lower side, for this same reason—a continuous wall of rock, as near like the natural conformation of the site as possible being preferable. That is, a batter wall, sloping back towards the building, and without a marked base line where it joins the earth, will aid in making the building seem at home in its site. The Allen house at Hollywood, California (page 82), is an admirable example of this treatment.





Exterior on page 59 *Arthur R. Kelly, architect*
In the Frost ranch house at Hollywood, Cal., the service wing has been turned at an angle to fit in more economically with a difficult hillside site

Plan on page 58 *W. Stillman Dutton, architect*

The summer home of Mr. Harry Gillett at Gates Mill, Ohio, cost $3000. The horizontal lines have been accented by doubling the shingle courses at intervals

Plan on page 58 *Arthur R. Kelly, architect*

Again the Swiss châlet has given inspiration for the ranch house of Mr. C. L. Frost, Hollywood, Cal., which nestles so comfortably into its steep hillside

As regards materials, the fundamental principles of consistency that have been at least inferred in the preceding pages

George Merritt Waid, architect

A bungalow overlooking Long Island Sound at Belle Terre. The entrance is at this side but the broad porch extends across the other side, commanding the view

A Western Coast bungalow that displays a remarkably daring utilization of modified Japanese motives. The roof, it will be noticed, is almost flat. The walls are made up of whole timbers

should be allowed to govern the choice. On a site bare of trees it would be folly to build the walls of logs or slabs. Where stones and rocky ledges abound, a stone wall or at least an under-

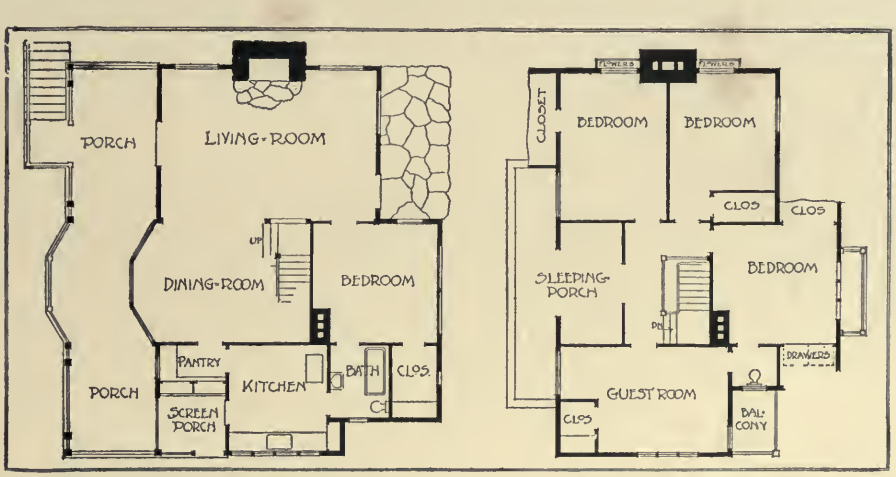
pinning and chimney of stone will be the obvious choice, in combination with rough boards, shakes or shingles.

In color, the mountain bungalow, like that in the woods or on

Plan below, other views pages 9, 46 and frontispiece *Myron Hunt & Elmer Grey, architects*

Another view of the Robertson home in the Ventura Valley, Cal.—one of the most remarkable examples in this country of fitting a house to its site

the sand dunes, will take on the general tone of its surroundings, blending with them rather than contrasting. While the smooth



Exteriors above, on pages 9, 46 and frontispiece *Myron Hunt & Elmer Grey, architects*

It is surprising, after the distinctly low appearance of the châlet from without, to find so much available room in the second story

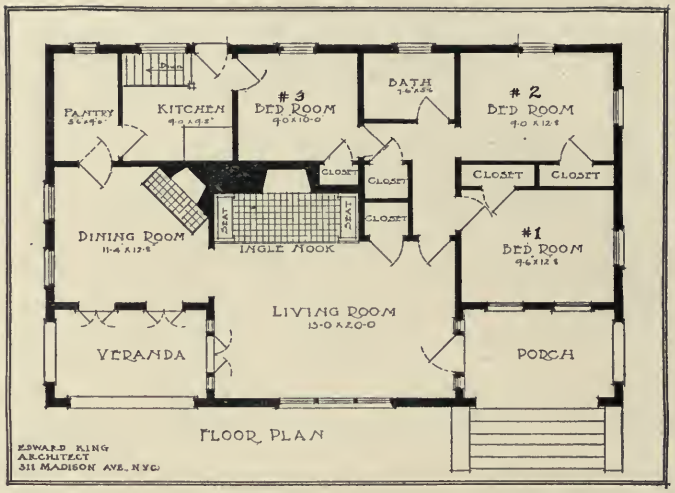
white stucco of a permanent home is beyond criticism where the immediate surroundings have felt and show the unmistakable marks of man's dominion over the natural—in smooth lawn and clipped trees, in geometrical lines of formal gardening and its architectural accessories, the informal home that rises abruptly out of an undisturbed portion of Nature's own domain should, by all the means at our command, be made to harmonize in material, form and color with its environment.

Chapter IV

The Plan

THERE seems to be a widespread popular idea that a bungalow is a cheap sort of a house to build. This is but a half-truth. The bungalow is built cheaply for the reason that we are usually content with a much less expensive finish and a far less stable type of structure. As a matter of fact, though, the bungalow is essentially an expensive type of building, for the reason that it requires more material to build a house of one story than a house having the same area of floor space in three stories. The roof is one of the most expensive parts of any building. It will be readily seen that, given a ground story with a roof to cover it, it would entail comparatively small additional expense to carry the side walls up between the two far enough to enclose another story. The available living area is doubled with an increase of probably less than one-third of the cost The bungalow plan, therefore, is essentially an expensive one.

It would seem at first glance an easy matter to design a house of the bungalow type, all upon one floor without having to bother about stairs and head-room and such difficulties, but it is in reality a problem calling for genuine skill on the part of the designer. The main difficulty that the amateur will encounter in sketching out a tentative plan will be the separation of the



This plan may well serve as a model in its isolation of the sleeping-quarters and the dining-room and service quarters from the living-room. The veranda serves also for an outdoor dining-room

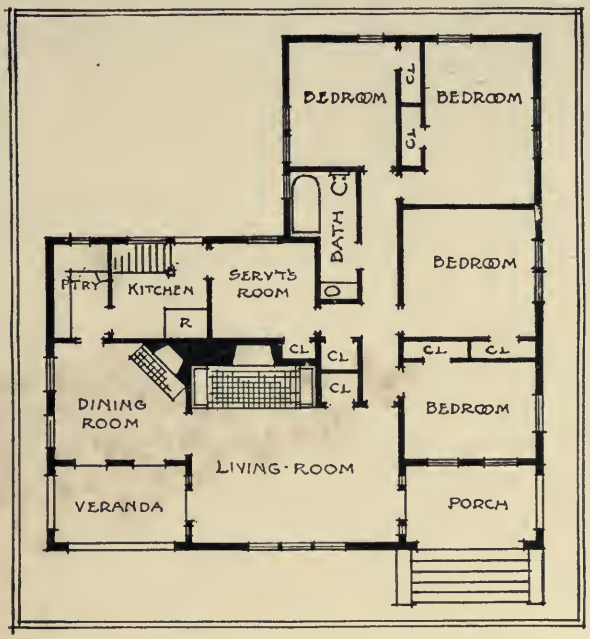
sleeping quarters, the living-quarters and the service portion of the house. Far too frequently we see a plan of a bungalow where the bedrooms open directly from the living-room, with perhaps a bathroom across on the other side of the building, next to the kitchen, for the sake of a condensed plumbing system. If a bungalow is worth building at all it is worth spending some time upon in the planning, so that the life of the household, while not of the severely formal type that the city house shelters, will yet be at least comfortable, and not robbed of all conveniences and privacy. The enemies of the bungalow—though they are few—have a foundation for their dislike of the type in the fact that far too many bungalows are so carelessly planned that life in them tends backward towards the less civilized past; in attempting to provide a field for a simpler form of life the unstudied and bungling plan fails to satisfy the fundamental needs of a self-respecting mode of living. We are far too ready to endure in a bungalow inconveniences that would not be tolerated in any more stable type of home. And the strangest part of it all is that these inconveniences are by no means necessary; the whole matter resolves itself into a need for more carefully studied plans.

The plan illustrated on this page is convincing proof that the living-quarters, service department and the bedrooms may be

kept distinctly separate, without necessitating a rambling plan that is much more expensive to build. It is a well known fact that the nearer a plan approaches the square the more economically it can be built. Wings, ells and many angles mean greatly increased expense.

This particular plan may well serve as a type, permitting enlargement without destroying its essential fitness in the matter of the inter-relation of rooms. I have indicated, in the diagram following, a way in which additional bedrooms could easily be added.

Too frequently a perfectly good living-room is spoiled by being darkened by a porch roof shielding its windows. This has been very cleverly avoided by Mr. King in the plan shown, and he has provided a porch off the dining-room that would undoubtedly be used frequently in the serving of meals. It may be objected that the other porch is too small, and it is undoubtedly a fact that we should have too much porch space rather than too little in a home where the great majority of the daylight hours are spent outdoors. It will be readily seen, however, that the porch in the plan mentioned could be prolonged, either to the front or the side, without affecting the plan, and, in the hands of a skilled designer, without spoiling the appearance of the exterior.



It would be readily possible to extend the sleeping-quarters of Mr. King's plan shown on the preceding-page without interfering with its essentials. It might be well also to make the kitchen larger

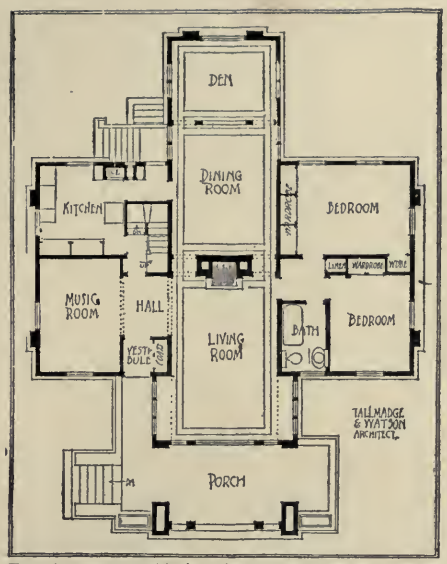
Another type is shown in the plan of a somewhat larger bungalow designed by Mr. Schnaittacher (page 10). Here the living-room is in the center, with the kitchen, pantry, servant's bedroom, laundry, porch, etc., on one side, and the four bedrooms, each adjoining a bath, opening upon the hall that runs along the other

Plan on page 67; interior on page 128 *Tallmadge & Watson, architects*

A mid-western type of one-story house that typifies the "Chicago School." It would be difficult to trace any connection between this and the bungalow of India

side. Here again the plan shows but one door leading from the living-room into the sleeping quarters—a most desirable feature of the bungalow interior. This plan is more expensive to build, even in proportion to its added area, for the reason that there are numerous angles in the outline, many of which could be omitted, however, if it were necessary.

A plan by Tallmadge & Watson that is somewhat similar in its essential features to the one just discussed is illustrated herewith. It has several particularly distinctive points, however, and is well worthy of our study. The architects have appreciated the value of long vistas and have secured these in a very clever manner, without sacrificing any of the essentials of



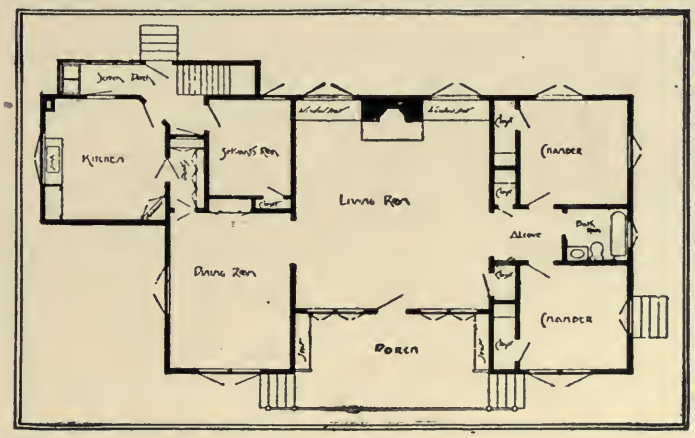
Exterior on page 66; interior on page 128

The Estabrook plan shows a remarkable development of vistas, without any sacrifice of convenient arrangement

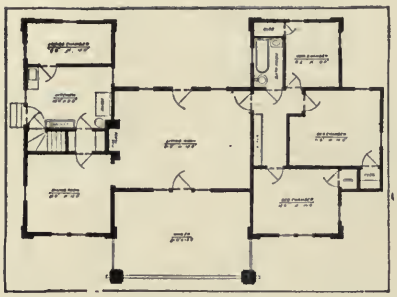
economical planning. This particular bungalow is intended for permanent occupancy and is therefore finished accordingly.

Another example of the central living-room flanked by two wings, one containing the dining and service quarters and the other the bedrooms and baths, is shown in Mr. F. W. Wilson's design for his own bungalow (page 29). There is a difference here, however, in that two doors open from the living-room, each into one of the main bedrooms, which have the bath between them. Mr. Wilson has added another feature to this plan in the patio, reached through the French window in the living-room and having but one additional exit—a gate in the five-foot brick enclosing wall that extends across the back.

The plan of Mr. Cole's bungalow, it will be noticed, is very much like the Wilson one in general type. It has no patio, however, and the arrangement of the service



The Cole bungalow is an excellent example of the central living-room type, with the sleeping-quarters reached through a single opening from the living-room

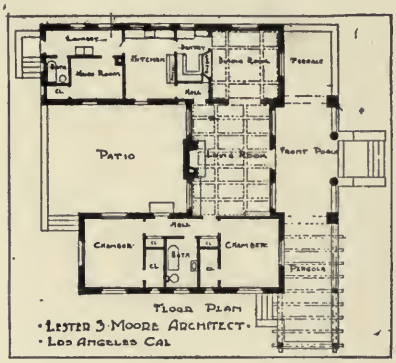


Exterior below *Aymar Embury, II., architect*
Another excellent example of the central living-room type, with the bedrooms opening from a hall. The maid's room adjoins the kitchen

department is different. Here too, there is the single opening between the living-room and sleeping-quarters.

An Eastern example of the central living-room type is shown in Mr. Embury's plan. Here again there is the single door between the living-room and the hall, upon which open the three bedrooms and bath.

Plan above *Aymar Embury, II., architect*
An interesting combination of brick piers and stucco walls on a wood frame



Exteriors on page 69; interior page 129
The patio type is now usually found with one side open

It is but a short step from this plan to the patio type illustrated in Mr. Moore's plan. In this the architect has used his materials in a way that suggests very pleasantly the Spanish Mission type of building, with its cool plastered walls and overhanging dark cornice.

Very similar in plan, but reversed, is Mr. Moore's second plan

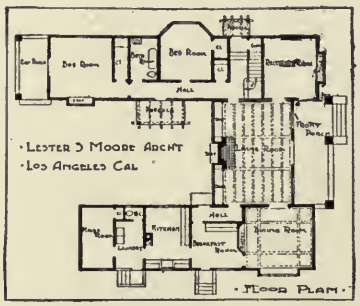
shown on page 70. The materials, however, are far different—redwood shingles instead of the adobe for the walls. Moreover, the bedroom wing, as will be seen in the illustration on page 71, is a two-story one, providing three more bedrooms.

Plan on page 68; exterior below *Lester S. Moore, architect*

The Hart bungalow at San Marino, Cal., has adobe walls strongly suggestive of the old Spanish Missions

Plan on page 68; exterior above *Lester S. Moore, architect*

The photograph is unfortunate in showing comparatively bare surroundings for the Hart bungalow. A front hedge would work wonders in the appearance of the building



Exteriors on pages 26, 71

The patio plan usually has a living-room in the center across the front. There are additional bedrooms here in the second story over the bedroom wing

Mrs. Girouard's bungalow shows another adaptation of the central living-room scheme. Here, instead of allowing the side wings to project to the front or rear, they are carried straight out at the same depth. The result is an extremely long bungalow, that is easily roofed and particularly pleasing in its exterior.

Another type of plan will be required if the bungalow is to be restricted in its site. A great many of the newer suburban communities are being built up with adaptations of the bungalow, usually with some second-story space, and too frequently these have to be placed on a

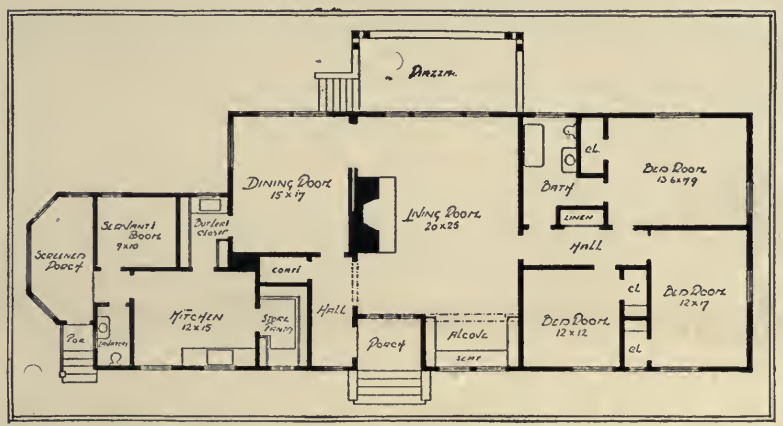
Plan on page 9; exterior on page 10 *Sylvain Schnaittacher, architect*

An ell of the porch secures all the available breezes and encloses a sort of patio in this California bungalow. Wherever the general plan permits, it is advisable to have this sort of a free-standing porch

comparatively narrow lot. The plan illustrated at the top of page 72 shows a successful solution of this problem. It will be

Plan on page 70; exterior on page 26 *Lester S. Moore architect*

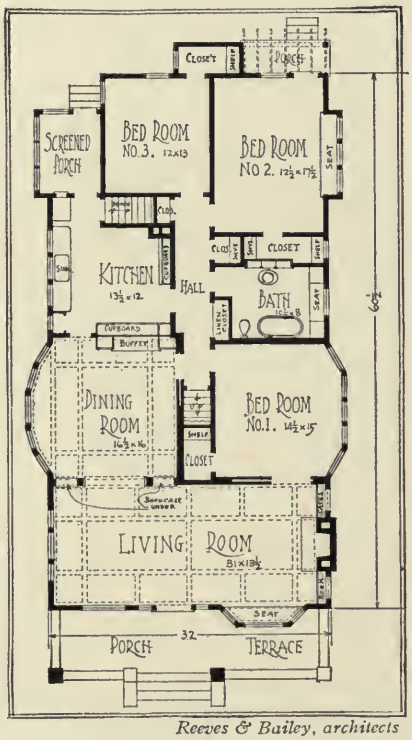
The high two-story rear wing robs the Hobert California home of the title of bungalow



Exteriors on pages 172, 186

In the Girouard bungalow the bedroom and service quarters respectively are drawn out horizontally from either side of the living-room to make a long, narrow building

noticed that here, as in the other plan, the kitchen is in immediate touch with the dining-room, but well isolated from the

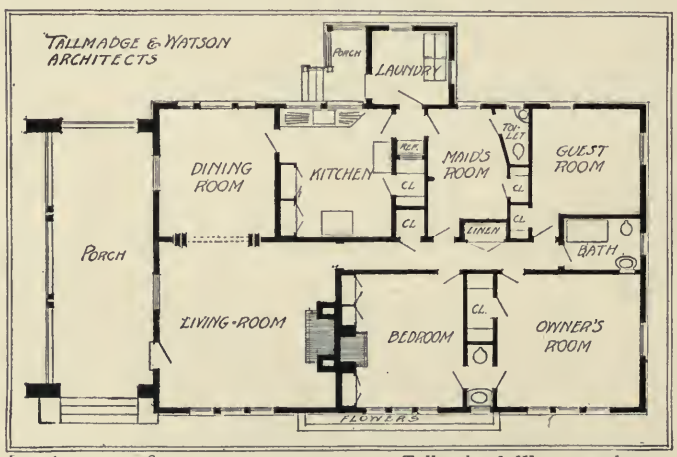


Reeves & Bailey, architects

A bungalow plan for a narrow lot, with the entrance directly into the living-room

bedrooms—there is but the one necessary door from the kitchen into the hall. Here again the architects, Reeves & Bailey, have succeeded in keeping the living-room well lighted. The porch, as indicated on the plan, extends only between the two blackened piers on the front, the remainder of its floor to the right being uncovered.

Another plan that could very easily be adapted to the long narrow lot is shown at the bottom of page 73. This one which, by the way, provides for one large bedroom in the attic, is open to objection in the fact that the only way from the bedroom hall into the living-room lies through the dining-room, a point that might or might not be a disadvantage, according to the circumstances in any particular case. The plan at the bottom of page 75 avoids this fault, if it may be called

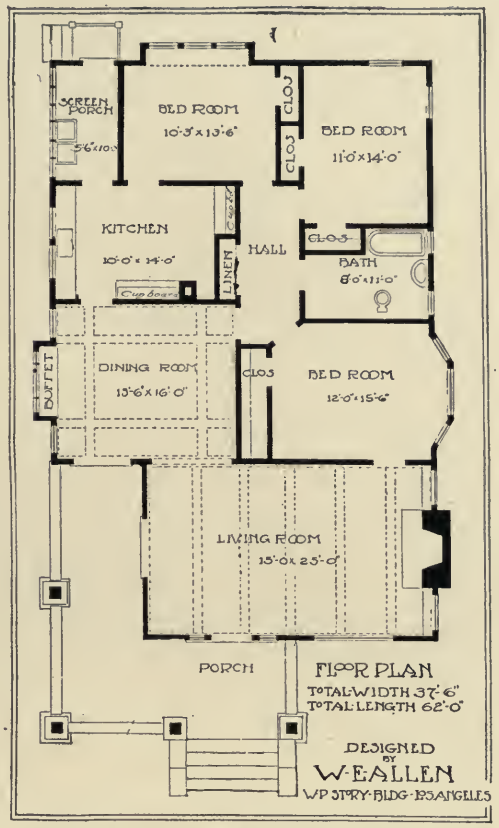


Exterior on page 8 *Tallmadge & Watson, architects*

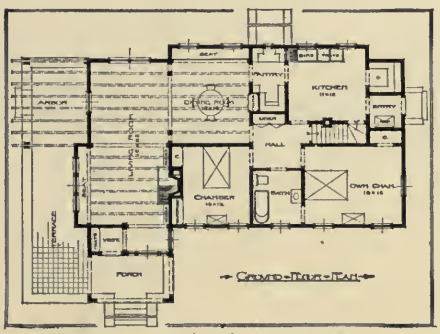
The plan of the Wilson bungalow at Ravinia, Ill., is one easily adaptable to the narrow lot by having the porch end at the front

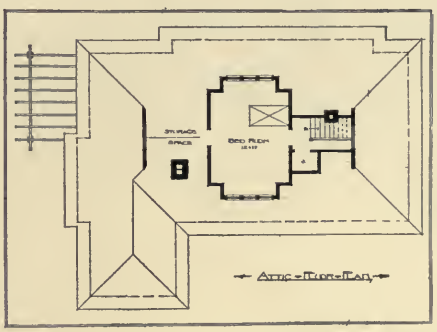
such, and is in many respects exceptionally well thought out. In addition it has the advantage of being almost square, so that it could be built most economically. The two plans of Tallmadge & Watson shown herewith and on page 41 are also of this deep-and-narrow-lot type. The way in which the hall in the second example, though comparatively a minor factor in the plan, leads to dining-room, living-room and bedroom hall, is most ingenious.

This brings us to several types that might be classed with the bungalows, although the first one does not properly fall under that head. In the Hubon camp



One objection to this plan for a narrow lot is that the way from bedrooms to living-room lies through the dining-room





Exterior on page 74; interior on page 144

A. G. Richardson, architect

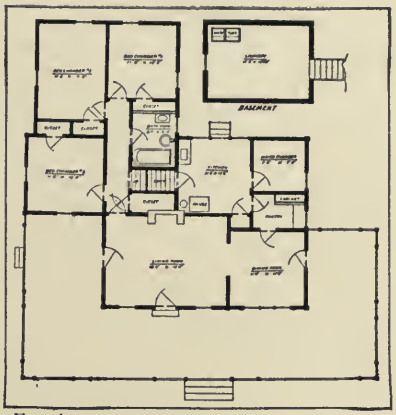
This plan is open to the same objection, if it be considered an objection, but it is a difficult matter to avoid for the narrow lot. There is one bedroom and storage space in the attic

Plan on page 73; interior on page 144

A. G. Richardson, architect

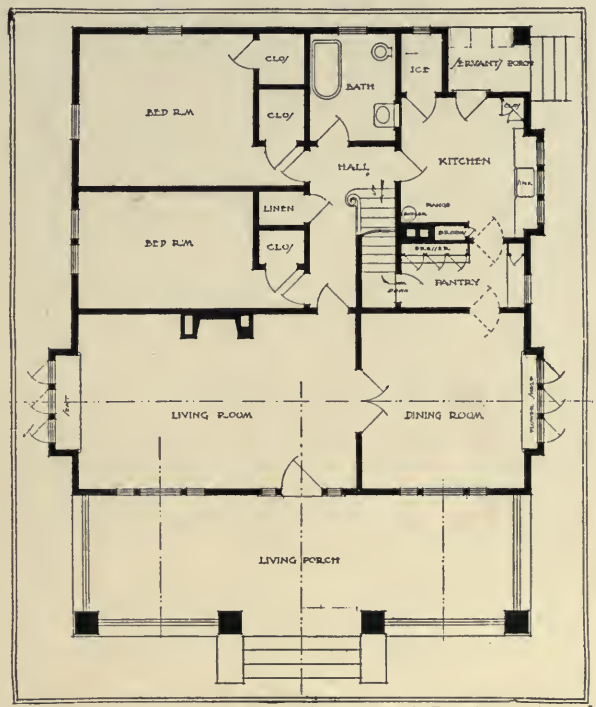
The living-room extends across the entire left-hand end, opening out upon the broad terrace, part of which will be sheltered by the vine-covered rafters

(page 57) the living-room opens up to the roof, having a gallery around it upon which open two bedrooms and a "dormitory." While the Hubon camp is not a bungalow, it is so interesting as a distinct type of informal summer home that it seems well worth including among the illustrations, even at the risk of being thought inconsistent.



Exterior on page 55
Aymar Embury, II., architect
Only one chimney is needed here, yet the service wing and sleeping quarters are both isolated from the living-room

Another plan that is shown (page 79) is interesting chiefly because of its unusual size, there being twenty-seven rooms and four baths in it, and also because of the fact that it represents the portable type of bungalow. This particular example was built in sections near New York City and erected at Ormond Beach, Florida.



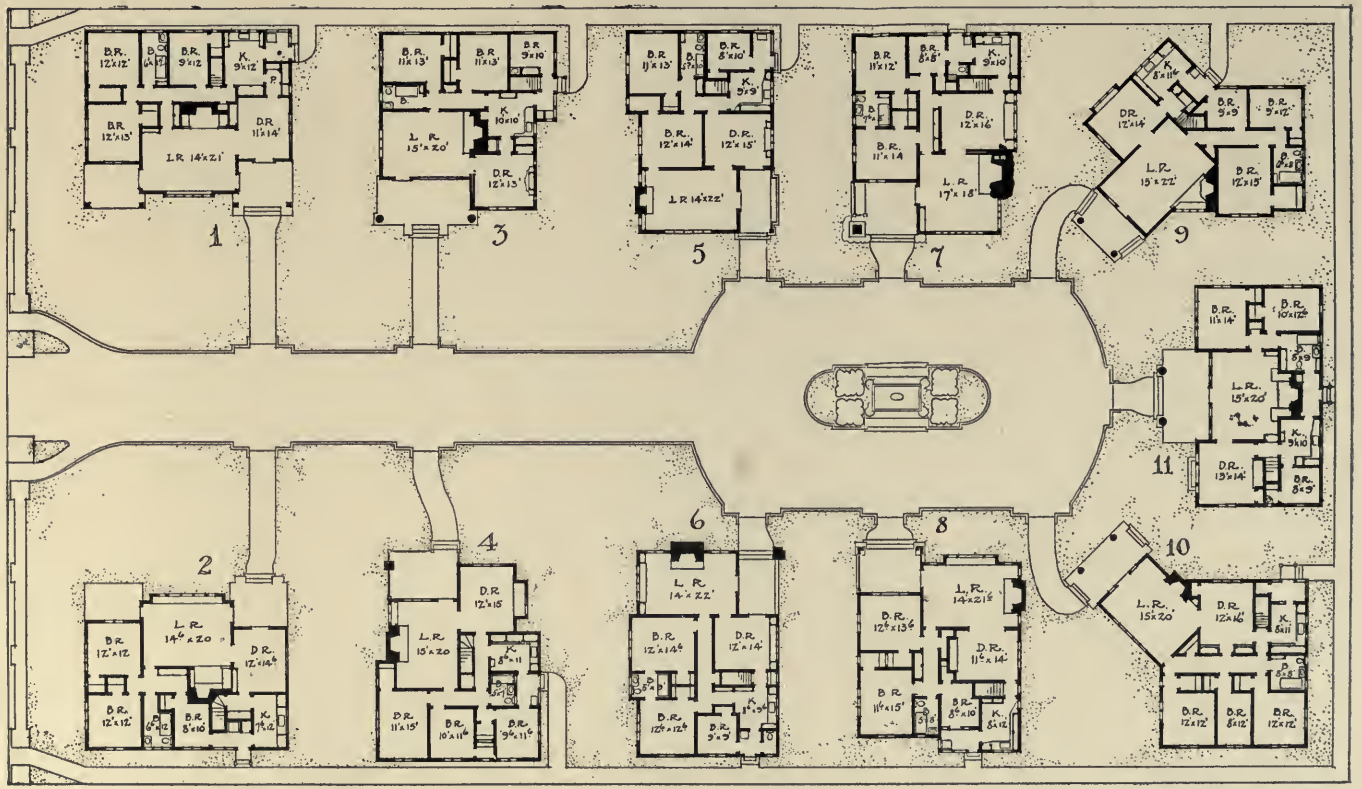
Exterior on page 76 *Hollingsworth & Bragdon, architects*
The long vista through living-room and dining-room across the front is an excellent feature; indeed the whole plan is extremely well studied

The plan by Mr. Embury that is shown herewith cannot be classified under any of the types that have been mentioned. It is a law unto itself, and is a

Plan on page 75

Hollingsworth & Bragdon, architects

The Camp home at Cranford, N. J., does not pretend to be a bungalow, but, as its plan shows, it is an excellent one-story house with supplemental bedrooms above



Exteriors on pages 14, 20-25; interiors 130, 142

Sylvanus Marston, architect

The plan of St. Francis Court, a bungalow community in Pasadena, Cal. Every one of these eleven plans is well worthy of careful study

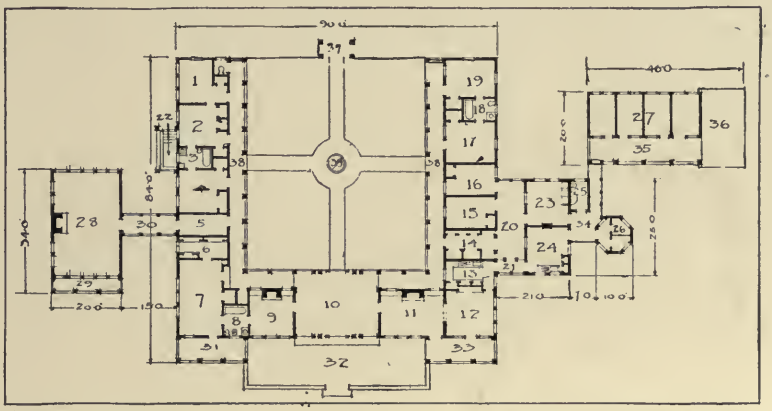
Frequently even in the one-story house there is a chance for making an architectural feature of storage space in the attic

Plan on page 79 *H. E. & H. F. Hartwell, architects*

The Putnam bungalow was built in sections in New York City and shipped to Ormond Beach, Fla., where it was erected

particularly ingenious solution of the problem of using but one chimney. It was necessary, therefore, to bring the kitchen and

Ernest Thompson Seton's porch at Coscob, Conn., has an excellent suggestion for avoiding a dark porch in the midst of the woods



Exterior on page 78

H. E. & H. F. Hartwell, architects

Twenty-seven rooms and four baths are found in this patio bungalow at Ormond Beach. The walls are of yellow pine and asbestos cement

living-room close together, and it is interesting to see how this has been done without disturbing the bedroom group.

The plan for the Allen ranch home (page 83) at Hollywood, California, is another one that refuses to be classified Nor is it any wonder that this is so when one considers that the structure is built on the side of a hill so steep that the second story does not come over the first, but is pushed up on a higher ledge of rock.

One of the problems in planning is to provide abundant porch space without darkening any of the rooms. This is not always possible when the most economical building is necessary, but the plans that are shown herewith will suggest a number of ways in which the porch may join the living-room without darkening it to any extent. It is surprising that many bungalow builders do not break away from the porch roof and work out some such arrangement as is illustrated on pages 79 and 84, or in the Haynes home in Massachusetts (page 11) Here a frameworkof rough,

Plan on page 57; exterior page 56; interiors on pages 81, 136 *William P. Hubon, architect*

The "dormitory" of the Hubon summer home is an excellent suggestion for emergency bedroom space

uncovered timbers rests on the porch posts. This may be covered with vines alone or with an awning that could be rolled up after the sun has gone down. Some such arrangement as this,

Plan on page 57; exterior page 56; interiors on pages 80, 136 *William P. Hubon, architect*
The open gallery extends around three sides of the Hubon living-room, giving access to the bedrooms and dormitory

together with at least a portion of the porch space entirely uncovered, would be a good thing to strive for in planning.

Then too, do not forget the sleeping-porch. It would be a very easy matter indeed to arrange for a sleeping-porch in conjunction with almost any of the bedroom wings shown among these illustrations of plans. Unfortunately few of the examples illustrated show this, but some of them do show another feature that is a product of the West and which we of the East might well borrow in planning our bungalow. I refer to the screened porch, without which no Southern California home is considered livable. On it most of the kitchen work is carried out, in the comfort that a well ventilated, vine-shaded outdoor room alone can bring.

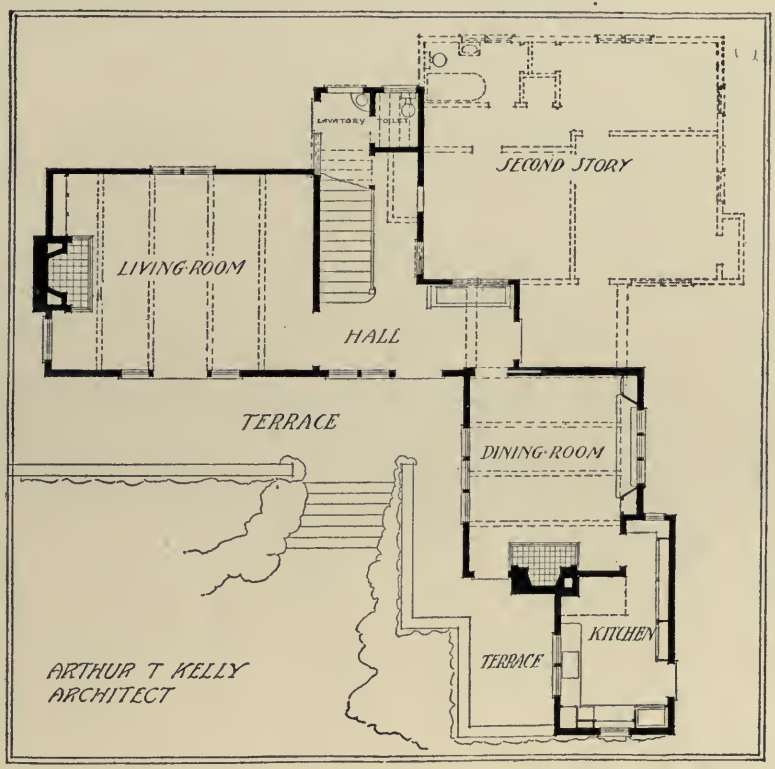
There is one other consideration that must be kept constantly

Plan on page 83

Arthur R. Kelly, architect

The Allen ranch house, Hollywood, Cal., is another inspiring example of how well a building may be fitted into a steep site

in the designer's mind when working out a floor plan, and that is the necessity for keeping the floor area as a whole one that permits of a simple and inexpensive roof. Keep the plan within the boundaries of either one long rectangle—for a roof of two



Exterior on page 82 *Arthur R. Kelly, architect*

The Allen ranch house is located on such a steep slope that the second story does not come over the first-story walls, but is pushed back up the hill at one corner

planes, or of several well connected minor rectangles where gabled roofs may be employed. A careful study of the plans here shown, in conjunction with the roofing systems that the respective architects have worked out, as shown in the exterior photographs, will indicate some of the possibilities. Excepting in the case of a plan that approaches the square, where the roof may be of four planes terminating in a central point, it will be well to strive for one main rectangle, that is considerably

It is surprising that more people do not make use of the open-roof type of porch, which secures all the available sunlight and cheer for the main rooms

longer than wide, with smaller adjoining rectangles that will be covered by gables in the main roof. And in order to secure that blanket-like roof that is associated with the true bungalow type,

In planning your porch space it will be well to keep in mind the desirability of an intimate connection with the dining-room or kitchen so that meals may be served outdoors

the main roof or its gables will usually cover the porch space as well as the interior with a minimum of breaks. In other words, instead of providing a separate roof for the porch, as is the common practice in other types of dwellings, the main roof or a gable will also shelter the porch.

Francis W. Wilson, architect

Wherever the site commands a good view, such as on the ridge of a hill, and the necessary space is available, the bungalow plan will naturally develop into a long, thin rectangle, with the living-room in the center flanked by the sleeping-quarters and service portion

Chapter V

Foundations

THERE is such a broad field of building materials from which to choose one or two for the bungalow that we are confronted with an actual embarrassment of riches. In addition to most of the materials used in our permanent homes, there are many more of a kind better suited, in most cases, to the informality of the bungalow type.

In the interests of orderliness and convenience it will be well to take these up under the three divisions of foundations, walls and roofs.

Probably the most satisfactory foundations for the wooden structure of modest pretensions are piers of concrete. These may be about two feet square, at all corners and wherever else they may be required to obviate the necessity for long and therefore expensive spans of the "sill" (the horizontal base member of the wooden superstructure).

If the soil where the building is to stand is a heavy clay, it may be unnecessary to build wooden forms to confine the concrete while it is setting; a clean-cut hole of square section may be dug down to a solid sub-strata of soil or rock, or to a firm base of sand, being sure, however, to carry the bottom below the frost line for that particular locality. In some of the northern states the frost penetrates to a depth of six feet, but three or four will

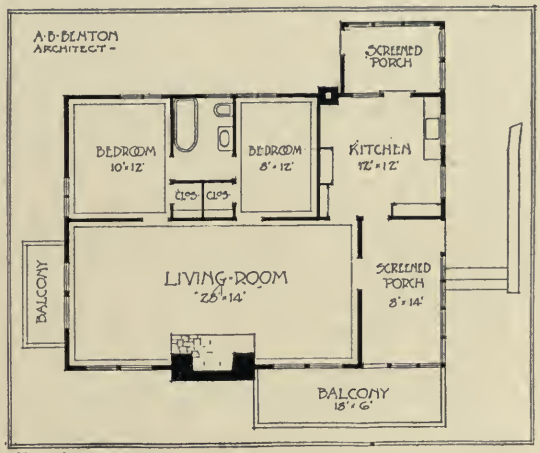
Plan on page 89 *A. B. Benton, architect*

An exceptionally instructive example of the stone foundation that grows directly from its environment

more often be found the limit. Always start a foundation pier of concrete, or indeed of any other material, on an undisturbed bed; otherwise there is sure to be at least a little settling of the support. With concrete piers it will be well to lay at the bottom of the excavation a few of the largest stones available, filling in between with smaller ones. On this dump a wheelbarrow load of the concrete, which has been thoroughly mixed by turning over and over, with the gradual addition of water, the following ingredients: cement 1 part, sand 2 parts, crushed stone (to pass through a $2\frac{1}{2}$-inch ring) 4 parts. Use only enough water to unite the materials thoroughly. Tamp the concrete into the excavation and then dump in another wheelbarrow load before the portion in place has become dry.

If the pier is to project above the surface of the ground, as

will probably be the case, it will be necessary to build a square form of heavy planks to confine it until it has set, and the tamping will have to be more carefully done in order to secure a smooth surface.



Exterior on page 88

From the balcony and a screened porch on which the meals are served, there is a view over the San Gabriel, Cahuenga and La Crescenta Canada Valleys, with the Pacific Ocean and picturesque Santa Catalina twenty-five miles away

The following table, which is taken from Kidder's excellent work, Building Construction and Superintendence, will show the quantities of cement, sand and stone required for each cubic yard of rammed concrete in the various proportions in which this is mixed for various purposes:

Proportions			Quantities required per cu. yd. of concrete		
Cement, sack	Sand, cu. ft.	Stone, cu. ft.	Cement, bbls.	Sand, yds.	Stone, yds.
1	1½	3	1.9	0.42	0.85
1	2	4	1.45	0.45	0.86
1	2	5	1.3	0.38	0.95
1	2½	5	1.2	0.45	0.90
1	3	6	1.	0.40	0.92

Thus, if in your locality cement costs $2 per barrel, sand 50 cents a yard and coarse gravel 60 cents a yard, a cubic yard of the 1:2:4 concrete will be $3.64. The cost of mixing and putting into the forms should not exceed $1.50 per yard, with wages at 17½ cents per hour.

A small saving in cost might be effected by carrying the concrete up just to grade and then building the remainder of the pier of brick or stone.

It may be found advisable to use stone throughout for the piers, particularly if there is a quantity of it available on the site, as frequently happens. Then too, if the chimneys are to be of stone it would be well to have at least the visible parts of the piers showing the same material. If the bottom of the pier excavations is rock or hard-pan the stone piers may be started directly on it, using broad flat stones for the footing course. If

The side walls of shakes are carried directly down to the ground—a rather unusual form of foundation excepting in cheap construction. This whole bungalow cost but $1200. It consists of five rooms and a bath

uncertain or yielding soil is found there, however, a footing course of concrete, as before, about eight inches deep, would be a wise precaution against settling.

Brick may be used in the same way on a footing course of concrete, provided the building it is to carry is of light construction, although ordinarily it is bad practice to have a brick wall under ground.

The cheapest foundation of all, however, for a frame building of light construction such as the bungalow usually is, will probbably be found to be locust posts. These should be about six

inches in diameter and should rest evenly on a footing course of concrete or on a firmly bedded large flat stone. It is well to give these posts a good coating of creosote in order to prolong their life. I was once discussing the comparative endurance of locust posts with a New England farmer when he offered the opinion that "a locust post will last about five minutes longer than a stone one." It is, of course, essential that the top and bottom of the

The foundation here is of rough redwood boards, set an inch or two apart with battens on the inside

post be sawed off perfectly square and at right angles to the length, so as to get a firm bearing on the footing and for the sill above.

Occasionally a combination of the concrete footing and the locust post may be found advisable. The post is set in the usual way on a flat stone and held vertically with guy timbers while concrete is rammed about it to fill up the excavation. The latter in this case need be only as large in area as can conveniently be dug, this depending, of course, on the depth to which it has to go. The saving by this method over the concrete pier is that forms will not have to be constructed to make the pier square and neatly finished above ground.

A continuous wall of stone has been used, with a raised line of pointing on the outside. The latter would be out of place with a less finished style of summer home

Whatever sort of foundation is decided upon, there is one point that should be borne in mind relating to the appearance of the finished structure. The whole character of the bungalow type calls for a building that is set as close to the ground as possible. The only practical consideration will be that the floor joists must be kept a foot or two above the ground so as to

Brick piers are used here, with stone for the chimney. Whatever piers are used, latticework should close the openings between them

keep them from becoming damp. Of course where a cellar is dug this matter of dry joists will take care of itself, but another factor will come into the problem—the need for getting windows in between the ground level and the bottom of the joists. For the sake of the appearance of the finished structure, keep these windows as flat as they can possibly be made. Use more sash rather than higher sash.

A feature that helps to make a bungalow appear low is the introduction of latticework between the piers. This screen may be very cheaply built of three-inch strips for the frame and ordinary lath for the lattice filling. There is no single thing that increases the apparent height and stiltedness of a building so much as leaving unscreened the openings between the piers.

Other exterior views on pages 13, 39, 100, 111, 153; interiors on pages 118, 148, 150, 152

Davis, McGrath & Shepard, architects

It is a popular misconception that a log house is an inexpensive sort to build. On the contrary, the cost of a well finished log structure is as great as one of bricks

Chapter VI

Wall Materials

THERE is no necessity in a book on bungalows to go very deeply into the whole matter of building materials for walls. The illustrations included in these pages show buildings in which practically every available building material has been used—brick, stone and stucco, in addition to the more common wood. Usually, however, the bungalow will be built of one of the several forms of wood—battened boards, clapboards, siding or shingles.

The simplest wall covering of these, and therefore the cheapest in most localities, consists in the use of rough hemlock or spruce nailed to the ordinary stud frame, either vertically or horizontally. Some provision must then be made for covering the joints—usually by narrow battens outside. The wall will be more durable and less liable to show the effects of weathering if the boards are put on vertically, being nailed to the sill and plate (the horizontal member forming the top of the stud frame and supporting the roof rafters). In this connection, however, it will be well to design the height of the building so that boards of standard length, ten, twelve or fourteen feet, may be used without cutting to waste, as it will be found impractical to use less than a full length board between plate and sill, excepting where an opening intervenes.

These boards for the outside wall may be unplaned—in fact it will be very much better for the appearance of the building if they are left in this rough condition. They take stain very much better and give a much more interesting texture to the wall. The battens, however, will ordinarily have to be planed, for the reason that lumber in this small size—about one-half

Interior on page 123 *Carlton Strong, architect*

The Austin bungalow is built of planks, 1½ x 10 ins., above a shingled base

inch by three inches—is not often obtainable unplaned. In putting these on over the joints they should be nailed to but one of the two boards they come in contact with. Otherwise they are almost sure to be split when the shrinking of the wide boards tends to open up the joints. If nailed to but one of the boards the batten will follow this and remain intact, still covering the opening—forming a sort of slip-joint.

James L. Burley, architect

Rough boards laid horizontally over the studs are used in this bungalow at Brightwaters, Bay Shore, L. I. The plan consists of living-room, kitchen, five bedrooms and bath

The inside finish of this simplest type of wall construction will be taken up in the chapter on Interior Finish.

It is usually more in keeping with the low and horizontal feeling of the bungalow to have the boards, when these are used for the

Interior on page 119

Rough hemlock boards, nailed vertically from sill to plate, with battens on the outside, are used for the walls. The cost of the bungalow complete was $1500

Interiors on pages 16, 119, 133

In the Bandini bungalow at Pasadena the same use of rough boards, battened, is found. It is perhaps the most inexpensive form of building

wall covering, show horizontal lines instead of vertical ones, and there is a very simple way of accomplishing this end without the use of battens. The lowest board is nailed flat against the studs and sill, or wedged to flare out. The second one is allowed to overlap it an inch or two, very much in the way that clapboards are laid. The only difficulty in this method is the liability of the boards to crack when they cannot be nailed flat against the studs. Although I have never seen it done, it would seem to be feasible to cut a quantity of wedge-shaped pieces, from two-inch stock, which would be nailed to the studs first, with the broad end of the wedge fitting down close over the top of each board. This would give a flat nailing for the overlapping board. Walls of this kind as well as those where the boards are run vertically will usually be finished at the corners against a post that will project just far enough to cover the edges of the boards.

In many localities, however, the most economical wall covering will probably be one of the finished materials, such as drop-siding, clapboards or shingles. Any one of these materials will

Walker & Hazzard, architects

In many localities side walls of shingles will be found practically as inexpensive for a good wall as any other material. This building cost about $2500

make a tighter wall and one which will not need repairs so frequently—a wall of rough hemlock boards is sure to need attention from time to time on account of the splitting of the boards and the opening up of joints. The manner in which these materials are used is too well known to need any discussion.

It is a common misapprehension that log houses are among the cheapest kinds to build. In any settled locality where lumber mills are within convenient reach, log construction will cost decidedly more than a wall made of any of the materials mentioned above. Even in a thickly wooded country, where the logs are to be cut as needed for use, it is difficult to find a sufficient number of logs having approximately the same diameter. Then too, there is the work of notching the ends so that alternate logs from two walls will interlock tightly at a corner.

Where logs are chosen as the wall material on account of their picturesque appearance or for sentimental reasons, the building must be planned so that there is no wall surface too long to be covered by the available length of timber. It will

Other exteriors on pages 13, 39, 94, 111, 153; interiors on pages 118, 148, 150, 152

Davis, McGrath & Shepard, architects

The logs used here were scraped free of bark before being laid up, in order to avoid the danger of damage from borers. The chinks are plastered inside and out

In this log structure the logs project one over another at the right-hand end to form a support for a balcony

Another exterior view on page 36

In the lodge at "Compton" the logs are dressed to a flat surface on top and bottom so that the chinks do not have to be caulked

James L. Burley, architect

Another instance of the use of rough boards laid horizontally to overlap. It is possible, as this Brightwaters bungalow proves, to secure an effect in this way that is not lacking in finish

Clapboards differ but slightly in appearance from the overlapped boards, but they are narrower. The cost was $700

be well also in planning to have as few angles as possible, in order to avoid the necessity for so much notching. It will be seen, therefore, that the use of logs restricts the size of the bungalow,

unless extraordinary measures are taken, and it also restricts the form of the structure—if it is to come within a reasonable cost—to a mere box. There are many log houses, some of them represented among the illustrations of this book, that have apparently not been very noticeably dwarfed by these restrictions. Suffice it to say that the large house of logs actually costs more per square foot of floor space than the house built of brick.

The best way to secure the effect of a log structure inexpensively is to nail slabs—the outside slices of a log—directly to a stud frame

When logs are used, the butts and small ends are, of course, alternated in laying them up, in order to keep the joints as nearly as possible horizontal. At the corners each log must be notched almost half way through in order to allow the log from the adjoining wall to project through in the characteristic way. The logs are also planed to a narrow level surface occasionally, so that the joints will not need caulking. For cheaper construction, however, it would probably be advisable to use the logs as they come, caulking the inside and outside of the joints.

Another difficulty that is fairly sure to confront the man who builds with whole logs is the appearance, after a year or more, of borers and other enemies that will work havoc under the bark.

Mr. Fesser's studio shows an unusual wall treatment. Over the inside of the crevices between chestnut slabs he nailed wire mesh, on which the mortar was put both inside and out

For this reason the logs are sometimes stripped of their bark, being laid up and then given a coat of protecting creosote. Occasionally, I am sorry to say, the logs are even varnished though it would be difficult to imagine any less appropriate finish for such an informal type of wall.

Fortunately there is a way of securing the effect of a log structure without using whole logs, and the method has almost none of the drawbacks that the time-honored method possesses. I refer to the use of slabs, nailed directly to the ordinary stud frame such as is used in a house that is to be covered with boards, shingles, or clapboards.

These slabs, which are most frequently available in chestnut, are the first cuts from two sides of a log when it is being sawed into boards. This material is ordinarily looked upon as waste in the saw-mill, and for that reason may be had at a very low price. Usually the best way to secure it is to go to a saw-mill and ask them the price per load, you to do the hauling.

One of the illustrations herewith shows a summer home in

James L. Burley, architect

Stucco is not so frequently seen in the temporary home or bungalow as in the permanent home. The lattice posts in this example are particularly interesting and will be more so when partly covered with vines

Other exterior on page 107; interiors on pages 131, 143, 167 *Cummings & Howard, architects*

Terra cotta tile was used for the walls of this bungalow, being left uncovered both outside and in. The building is, of course, fireproof

which slabs have been used with excellent effect. Aside from the panels between the first-story windows, which will be described later, the walls were made by nailing chestnut slabs directly to the studding, with a space of from half an inch to an inch between each pair. The builder then cut some half-inch wire mesh into strips wide enough to cover these open joints, affording a nailing on the two adjacent slabs. The strips were fastened over these joints on the inside, being secured with half-inch wire staples. The next step was to mix some brown-hair mortar, using a generous amount of hair and about one part Portland cement to three parts of sand. This was laid in the joints between the slabs from the outside, being pressed firmly in so that it formed a clinch over the wire mesh. The joints were then gone over in the same way from the inside. Of course the joints opened up to some extent after a year or so, due to the shrinking of the slabs, but with cement and a pointing trowel the wall was readily made tight again.

It may be interesting to know how this same builder, who was an amateur, secured the half-timber effect in the panels between

the windows. He first nailed rough boards to the stud frame, then beveled two sides of ordinary lath and nailed these three or four inches apart on the wooden base, so that an undercut groove was formed along both sides of each strip, to hold the plaster in place The whole surface was then plastered with the same mixture of mortar, hair and cement, as that used in caulking the joints between the slabs. Wire mesh nailed over the whole surface, on strips that would hold it a half-inch or so away from the board, would have served the same purpose. After the plaster was thoroughly set the panels were tinted red, in this instance, with ordinary shingle stain.

Another way of using the slabs is to sheathe the stud frame first with ordinary rough boards, nailing the slabs on top of these. This of course obviates the necessity for caulking the joints and makes a tighter wall. It would be well to run the sheathing

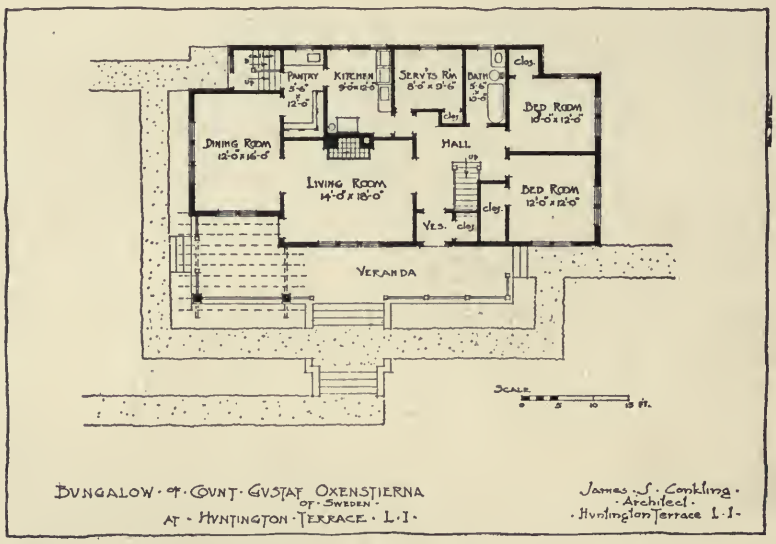
Other exterior on page 106; interiors on pages 131, 143, 167 *Cummings & Howard, architects*

The terra cotta blocks are used not only for the walls but for the terrace as well, laid up just as bricks are laid

boards at right angles to the slabs, or, for the sake of stiffening the structure, the sheathing boards are sometimes put on

Plan below *James S. Conkling, architect*

The walls of this Huntington, L. I., bungalow are of stucco on metal lath



diagonally, although the extra cutting necessitated by this method would make it hardly advisable unless the building were to be a fairly high one.

Chapter VII

Roofing Materials

THE choice of a material for the roof, unless the building is of the more permanent type, erected of brick, stone or cement, is rather limited. Shingles will probably be used in nine cases out of ten, and it is very fortunate that this roofing material, which is in most localities the cheapest presentable roof covering, should be so thoroughly in harmony with the bungalow type. There are, of course, other materials of approximately the same cost or less, such as tar paper and some of the patent roof coverings that are laid in sheets directly from a roll. Some of these have the advantage of being less inflammable than shingles and also more easily laid. Ordinarily, however, I think the bungalow builder's personal choice will fall upon shingles in preference to any of these recently introduced substitutes.

There is one material that deserves special mention and that is the "asbestos shingle." This is made of asbestos and cement, has the appearance of soapstone, and is laid in the same way that slate is laid. It is more expensive than the shingle roof, as might be expected from its fireproof qualities.

On the bungalow that is built of brick, stone, stucco or cement, one of the longer-lived roof materials would, of course, be used—slate, tile or perhaps, with a flat roof, tin. It is the purpose of

When the plan approximates a square this type of roof will probably result, although where there is no second story the pitch will be much lower and the dormer will be omitted to preserve the true bungalow character

this book, however, to deal only with the materials employed in the bungalow that is used perhaps but temporarily, and which is therefore of less enduring construction.

To return to shingles, there are two methods of laying these in common use. The better way is to cover the roof rafters first with a sheathing of rough boards, securing a substantial surface on which to lay the shingles. Usually a layer of tar paper or roofing felt is laid on top of these boards and underneath the shingles. A cheaper way to lay a shingle roof is without the roof boarding, fastening the shingles directly to what are called "shingle-laths"—strips laid across the roof rafters and spaced so as to give a nailing for each course of shingles. This way of making a shingle roof is frequently seen in barn construction and it has one advantage aside from its lower first cost—any moisture that may find its way through the shingles will immediately dry out instead of rotting the roof boarding. This very slight advantage, however, is more than offset by the necessity of covering up the under surface of such a roof if it is visible inside.

It is well to remember that shingles should not be used to cover a roof laid with a pitch of less than thirty degrees, as the moisture from melting snow, if not the rain, is sure to work up between the courses and cause leaks.

Modern shingles are so apt to curl under the heat of the sun that they should be laid with not more than four and a half inches of their sixteen-inch total length exposed, and it is well to keep in mind also the fact that there is usually a right and a wrong side of each shingle to be exposed, depending, of course, on the way the grain runs.

A shingle roof should last from ten to fifteen years, excepting that in salt air it is liable to deteriorate more quickly than inland.

Many shingles are laid at the present time without any

Other exteriors on pages 13, 30, 94, 100, 153
Interiors on pages 118, 148, 150, 152

Davis, McGrath & Shepard, architects

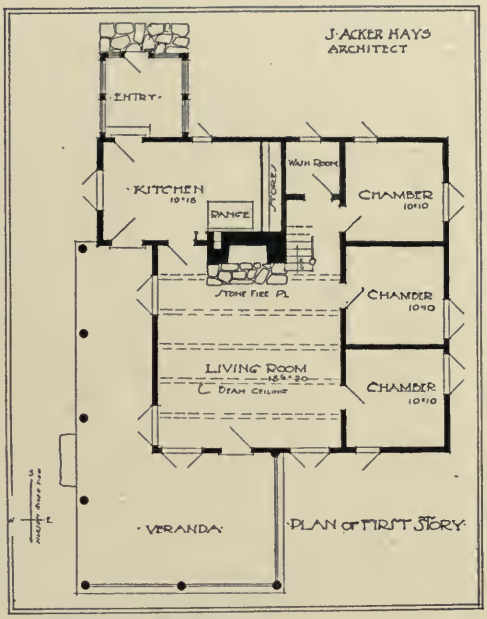
In this Adirondack lodge a particularly pleasing under-surface of the roof has been obtained by laying the shingles on a framework of saplings

In choosing a material for the roof it will be well to keep in mind the inside appearance as well as the outside, and also the possibilities for decorative cross-bracings

Plan on page 113; another exterior on page 113 *J. Acker Hays, architect*

One of the prepared roof coverings that is obtainable in rolls is used on the Sadler bungalow at Fort Montgomery, N. Y.

protection or preservative coating, in the thought that they will more rapidly attain that very effective silvery gray tone in weathering. Such practice was all very well with the old hand-riven shingles of Colonial days. In these the surface followed the fibre of the wood and therefore was very much slower in showing the effect of alternate sun and rain. With the modern shingle, however, it is real economy to protect the wood in some way from the weather. The best



Exteriors below and on page 112

The Sadler bungalow is limited to the essentials in the matter of equipment. The water is carried from a nearby spring

Another exterior on page 112, plan above *J. Acker Hays, architect*

The joints of the prepared roofing are covered with a rubber preparation. From this side of the Sadler bungalow there is a magnificent view over the valley with the Hudson River in the distance

Other exteriors on pages 57, 115; interiors on pages 145, 151 *Geo. A. Clark & L. du P. Millar, architects*
The roof of the Childs California home is covered with one of the prepared roofings that comes in a dull lead color

treatment is with a creosote stain, as the creosote penetrates the pores of the wood and acts as an effective preservative. While it is much easier to give the roof a brush coat of the stain after the shingles are laid, a far more efficacious protection is given by dipping the shingles in a barrel of the stain, after which they are dried and then laid. In dipping them the stain should cover all but about the last six inches.

There are many ready-made shingle stains on the market, most of which are thoroughly reliable, and among which may be found a silvery gray that will give nearly the same tone as a time-weathered shingle acquires. In localities where these are not available, an acceptable substitute may be made by mixing paint with an equal amount, or even more, of creosote oil. The paint should be of the ordinary consistency and, of course, in the color desired.

If it is found necessary to collect rain water from a shingle roof creosote must not be used. In that case it would be

Other exteriors on pages 57, 114; interiors on pages 145, 151 *Geo. A. Clark & L. du P. Millar, architects*

The roofing is turned over a rounded edge at the eaves in a way that gives it the appearance of a solid lead roof. The roof rafters inside are sheathed, the spaces between them being filled with sawdust to keep out the heat

necessary either to allow the shingles to go unprotected or to cover each course of shingles, as laid, with paint. Needless to say, this is a slow and not particularly pleasant task.

While on the subject of roofing it may be well to include a word on roof gutters. If the water is to be collected from the roof there is no better gutter than that cut from a solid stick of cypress. These are readily obtainable throughout New England but are probably not so often seen in the West.

Although the majority of summer homes probably are built without gutters along the eaves, it would be well to include this very slight additional expenditure for the sake of preventing the disheartening results to lawn or flower border that a dripping roof is sure to bring.

Chapter VIII

Interior Finish

IT seems always more fitting to avoid plastered interior walls in favor of some less formal treatment where the bungalow is used merely as a summer home. For the permanent home, whether bungalow or not, plastered walls will remain, to many people at least, the choice, and some of the illustrations shown herewith indicate how bungalows of this more enduring type have been finished as regards the interior wall surfaces. It will be noticed, however, that even in these there is a suggestion that the house itself is not of the ordinary three-story sort. For example, in the Estabrook bungalow the ceiling (p. 128), instead of being flat, rises to a ridge in the middle, suggesting the low-pitched roof that is seen on the outside. Again, in the dining-room (p. 129) of the Hobert bungalow at South Pasadena, the treatment in white-painted wood wainscoting, built-in side-board and beamed ceiling is suggestive of the bungalow type again rather than of the three-story house.

The simplest treatment of all, where the exterior is covered with rough boards, is to leave the studding uncovered in the interior. In order to avoid a commonplace and makeshift appearance, however, it will be necessary where this is done to spend some time and thought in the arrangement of a symmetrical and suitable spacing of the studs themselves; that is, they

Exterior views on pages 13, 39, 94, 100, 111, 153; other interior views on pages 148, 150, 152

Davis, McGrath & Shepard, architects

Particularly in bedrooms is the need felt for a neater finish for the walls than that obtained in allowing the studs to show. Twelve-inch boards are used here, battened with six-inch boards

should not be allowed to come just where the builder would naturally put them, but should be equally spaced between

Exterior on page 97

The simplest finish of all is to leave the studs uncovered and unplaned staining them and the inside of the boarding

Exterior on pages 16, 98; other interior on page 133

The walls are covered with battened twelve-inch boards nailed vertically

corners and between openings. This is no simple matter, by the way, particularly where the side of a room is broken up with windows that are not centered.

An inside finish of battened boards is used here, giving the effect of being set back so as to leave the studding frame slightly projecting

It will help the appearance of the studding also if the sill that provides a support for the window-frames is carried entirely around the room between the studs, instead of just under the windows, as is sometimes done. It may be worth while, also, to carry the two-by-four-inch piece that forms the top of the window-frames around in the same manner, forming a sort of frieze. If the studding is exposed, do not have it planed; it will harmonize much better with the rough surface of the outside boarding if it is allowed to remain unfinished. The stain that is then applied will affect the framework and the panels alike.

It will be necessary, however, to case the window-frames and door-frames in the interests of a neat and orderly appearance for the interior. This has been very well done in the living-room that is illustrated at the top of the preceding page, although the appearance would have been less harsh in contrast if the casing

and window-frames had been stained like the walls, instead of being painted white.

While we are considering this particular illustration it may be well to call attention to the fact that the windows themselves are casements, hinged to open out, and the openings are further protected by screens that are hinged inside, as shown, to open in. Without any intention of being unduly dogmatic I would suggest that windows of this type are far better suited to the bungalow than the common double-hung type.

If it is felt that the appearance of the interior, where the studding and outside boarding are allowed to show inside, is too barn-like and unfinished, there are several ways in which the wall may be treated at small expense to remedy this. The simplest of all, probably, is the tacking of burlap or some similar

A rustic interior finish such as this is not often seen, which is just as well, perhaps, for its untidiness is hardly offset by intrinsic beauty. It is a difficult matter to carry rustic work, either inside or out, to a point short of affectation

wall covering in the panel spaces between the studs, directly to the outside boarding, or this treatment may be given the wall above the sill line, securing, in some one of the ways to be mentioned, a wainscoting below.

In bedrooms particularly, the appearance of the open studding is usually felt to be inadequate. Too frequently, however, this difficulty is overcome merely by nailing common beaded ceiling

Pond & Pond, architects

Even in the more finished type of home a high wainscoting of rough boards, battened, may be used to excellent effect, as in this enclosed tile-paved porch

boards of three-inch North Carolina pine on the inside of the studs. Nothing could be more commonplace than this. It is far better, if the ceiling alone is insisted upon, to use the six-inch width of boards, with the edges square-jointed or V-jointed instead of beaded. An illustration on page 81 shows a room finished with this material, although in this case the ceiling has been put between the studs rather than upon the face of them. The outside of the building in this particular instance was shingled.

In another illustration, page 124, taken from a home of the more enduring type, a high wainscoting has been made of V-jointed cypress boards, alternating six-inch widths with ten-

inch widths, run vertically. The narrow frieze is plastered. This same treatment, however, could be applied to the unplastered bungalow by making the frieze one of burlap, for instance.

Instead of the planed ceiling stock, rough boards, battened, could be used—a treatment similar to that suggested for the exterior. In addition to the horizontal or vertical lines of the

Exterior on page 96 *Carlton Strong, architect*

The walls here consist merely of one-and-a-half-inch planks, finished inside with a batten of triangular cross-section. The lighting fixtures, by the way, were made of gas pipe by the plumber

battens themselves, other strips of the batten material could be put in at right-angles, opening up possibilities of various paneling effects.

Another covering for the studs is a material that is just beginning to become widely known—plaster-board. It is prepared in sheets thirty-two by thirty-six inches, so that it can be nailed, without cutting, directly to the studs where these are spaced sixteen or eighteen inches on centers. Plaster-board is designed to take the place of lath and plaster. The surface resulting is smooth with the exception of the joints, which may be filled with plaster. Over this surface, which is not beautiful in itself, may

A high wainscoting of cypress in which six-inch and ten-inch boards are used alternately. The V-joint, as here, is always preferable to the beaded joint

be stretched one of the wall coverings of the burlap family. The resulting wall is thoroughly tight, and if the builder is willing to go to the additional expense of filling the spaces between the studs with mineral wool or some other non-conducting material of that kind, a frame structure may be made practically as warm in winter as a brick one.

Still another interesting possibility in the way of treating the inner side of the studs was worked out by Mr. Fesser in building his studio which has already been mentioned in connection with slab exterior walls. He found it possible to obtain from almost any of the wholesale coffee-roasting houses Java mats of straw. These are of double thickness, and, when the bindings have been cut, measure about twelve feet in length by thirty inches wide. They may be tacked directly on the studs or held in place with strips of molding. Owing to the fact that the

straw used is both rough and smooth, the stain which Mr. Fesser applied dried in irregular strips, making a very interesting texture which he further embellished with stencils, using some of the symbols employed by the American Indian in his pottery and basket-weaving.

Another treatment of the interior, which is particularly in keeping with the house built of logs or slabs, consists in nailing slabs from the smaller sticks of timber between floor and window-sill line to form a wainscoting. The space above this might be finished in one of the ways suggested above—covering it with burlap or plaster-board, for example.

Exterior on page 48 *William G. Rantoul, architect*

An inside finish of twelve-inch boards with joints covered vertically by three-inch battens and with the addition of horizontal members dividing the wall into paneling. There are great opportunities for individual expression in this method

Exterior on page 12; another interior on page 127

The Lindsay bungalow at Altadena is finished inside in this same simple manner—twelve-inch boards, battened

Exterior on page 12; another interior on page 126

Another view of the Lindsay living-room, showing its excellent supply of windows and the great stone fireplace

The scheme followed by one bungalow builder was to cover the studs with rough hemlock boards from floor to plate, and then to divide the wall surfaces up into panels by nailing strips of birch directly to the boards. The latter were stained before the birch was put on.

One of the illustrations herewith (page 125) shows the dining-room in the Hollander bungalow, Misery Island, where a most

Exterior on page 66; plan on page 67 *Tallmadge & Watson, architects*

In the living-room of the Estabrook bungalow, looking towards the dining-room and den. The form of the ceiling indicates the one-story house

effective wall surface has been secured by covering the studs with twelve-inch boards of a distinct grain, such as slash oak or cypress, and working out a series of panels by battens and cross battens.

One of the most ingenious schemes, however, is illustrated on page 131, where a corner of a bedroom is shown. Advantage has been taken of the fact that paneled stock doors, of Oregon fir, redwood or gum, are obtainable at a cost very much below that of the same area of built-to-order paneling. A number of these doors were purchased and used both as interior partitions and as a covering for the inside of the main

walls. They are very easily put in place, the joints between them being covered by batten strips which terminate in a base-board. It is, of course, important that the spacing of doors and windows be arranged in advance as far as possible so that the doors will not have to be sawed in half. In this particular illustration it is worth noting that the door itself has been made very much heavier and of a different character, so that it would

Plan on page 68; exteriors on page 69 *Lester S. Moore, architect*

The white enameled wainscoting, the unusual type of built-in sideboard and the ceiling give a suggestion, in a very subtle way, of the informal character of the building

not lose its individuality among so many of its transformed fellows.

Many other treatments of the interior wall surface will suggest themselves. The main thing to keep in mind is that the material used should be in keeping with the informal type of the building itself, and that it should not attract too much attention to itself. In other words, a satisfying wall covering for the bungalow should stand the same test that a decorator once gave as a suitable one for wall papers. So long as one is not conscious of a wall covering, when visiting a bungalow for the first time, it is in good taste.

Plan on page 77 (No. 1)

Sylvanus Marston, architect

One of the living-rooms in the St. Francis Court group of bungalows, all of which are plastered throughout

So much for the side walls. Where there is no flat ceiling and the roof rafters themselves are exposed, it will seldom be found advisable to cover these at all. If the roof itself is of shingles on shingle-lath, however, the inside will have a rather unsatisfactory and unfinished appearance. This may be improved by nailing roof boards in between the rafters, close up against the shingle-lath. It would be far better, of course, where the under side of the roof is to be visible, to use boarding in the first place on top of the rafters, before the shingles are put on, as was done in the case of the Hubon camp illustrated on page 136.

Another treatment is shown in the illustration of the Bandini bungalow (p. 133). Rough boards have been nailed across the face of the rafters, with the joints covered by battens.

The point to keep in mind, then, is that the roof itself should

Exterior on pages 106, 107; other interiors 143, 167 *Cummings & Howard, architects*

One of the most ingenious schemes for building interior partitions or wainscoting is to buy stock doors of Oregon fir or redwood and batten the joints when they are set up in a line

be built so that its under side makes an attractive covering for the rooms below without further treatment.

On the subject of floors there is very little to be said. One

An interesting effect has been secured by leaving the floor joists uncovered to form the ceiling of the first story. The balcony is supported on these floor joists as cantilevers

wants a good floor whether it is for a bungalow or for a city residence, although it is of course unnecessary to use materials like polished oak, parquetry or hard maple in a temporary summer home. It is hard to improve upon comb-grain Georgia pine for a durable and not unpleasing floor in any room. North Carolina pine is cheaper but is more liable to sliver. The matter of flooring, however, may well be left to be governed largely by what materials are available in the local markets. Where good flooring is not readily obtainable, a way out of the difficulty is to lay linoleum over common boards,

with a generous layer of newspapers between to take up inequalities of surface. For the kitchen, pantry, service closets and such places, there is no better floor covering than this.

Exterior on pages 16, 98; another interior on page 119

A view in the Bandini living-room looking towards the dining-room. It will be noticed that the roof rafters are covered horizontally with wide boards, battened, as in the side walls

John P. Benson, architect

In Mr. H. P. Benson's bungalow at Danvers, the living-room is carried up to the roof, giving a splendid chance for the architectural treatment of the brick fireplace, gallery and the ingle seats

Chapter IX

The Fireplace

A BUNGALOW without a fireplace would be almost as much of an anomaly as a garden without flowers—and as cheerless. Perhaps you have heard of the man whose definition of a home was, "a fireplace, boxed in." It is even more fitting as applied to a bungalow. Even though the bungalow be used only as a summer home, there are always a great many nights when a fire is a real necessity. And many a time, when it is not that, it is a great comfort, particularly when a rainy spell drives us indoors for a time.

The living-room is the place for it, of course, but if the additional expense be permitted, it will be a wise thing to provide for another and smaller fireplace in the dining-room as well. In many plans it will be found that two chimneys are necessary, and usually the one serving the kitchen may be given an extra flue for the dining-room fireplace. Where but one chimney is planned, the living-room and kitchen will need to be both adjacent to it.

An informal type of fireplace will almost always be in keeping with the general character of the building itself, so that the chimney facing of brick or stone will need little or no embellishment in the way of a mantel facing. A heavy oak shelf, supported by "corbeling"—stepped-out stones or brickwork, will

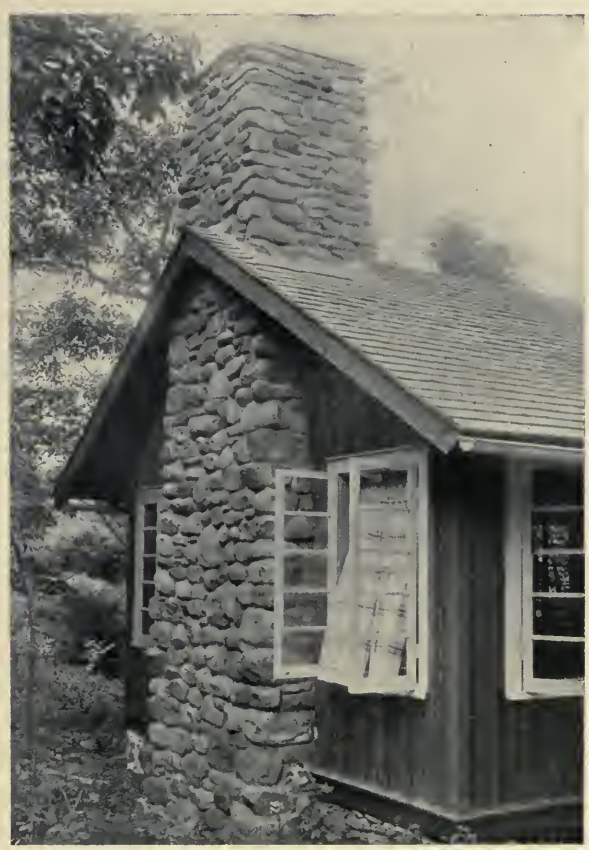
often be the most appropriate treatment. A number of the accompanying illustrations show this type. Occasionally the stonework itself is made to form the shelf over the opening, or the brickwork is built out in the same way. One of the most effective mantels I have ever seen in a bungalow consisted merely of an old railroad tie, supported on five or six great

Plan on page 57; exterior on page 56; other interiors on pages 80, 81
William P. Hubon, architect
Mr. Hubon has made a more effective feature of his stone fireplace by running the stairway to the attic up around its front

wrought-iron spikes driven into the cement joints of the stonework facing before it had become hard.

Of greater importance than the outward appearance, however, is the construction of opening and flue. Back in the fifteenth and sixteenth centuries our ancestors built their wood fires on the stone floor of the great halls and let the smoke find its way out as best it might. The experience of many a new home-owner to-day, coaxing along the first fire on his hearth, prompts the thought that we might suffer less from the smoke if we did it that way now.

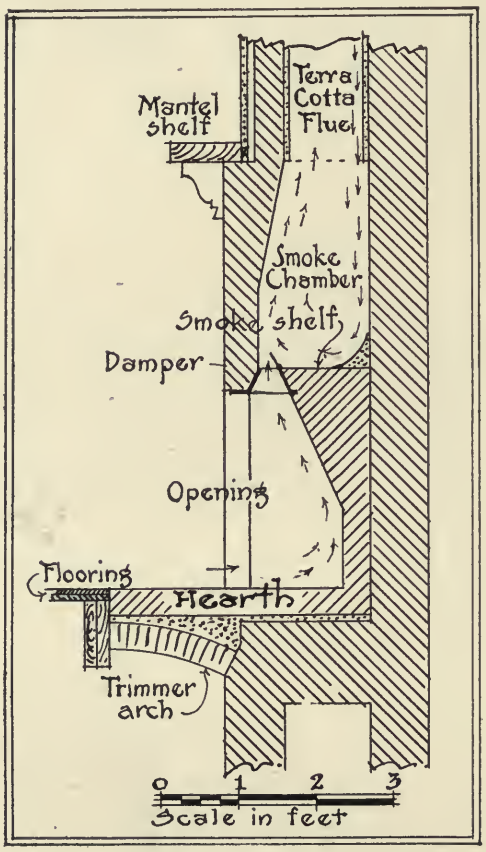
It is a curious thing, when you turn it over in your mind, that in three centuries of chimney building we have yet to learn, as a race, how to construct a fireplace and flue so that it will do the work expected of it. There *are* fireplaces that do not smoke, of course, but they work in spite of their designers, not because of them. It is an easy matter to make a fireplace draw; simply make the flue large enough and it will draw not only the fire but the fire-tools and a rug or two for good measure. That is the sort our Colonial ancestors built. On a cold night they blistered their toes before the mighty blaze and developed rheumatism and influenza through the mighty wind that rushed past them on its way up the chimney. Ninety per cent. of the heat went up the chimney—but then cordwood was to be had for the cutting.



The chimney of rough stonework seems in many ways to be more appropriate for use with a rough wooden building than a chimney of brick or cement

One of the main difficulties in fireplace building in our permanent homes—not of the bungalow or summer shack type, is our universal desire for a *big* fireplace. I have yet to find the man-about-to-build who does not ask at once for "one of those fine big fellows—the kind that burns whole cordwood." I suppose this is

based on the assumption that if a small fireplace is a good thing, a great big one is that much better. Well, it is not, so far as the permanent home is concerned. A big fireplace is too powerful a ventilator for the home living-room; it needs air—a great quantity of it, and the fire will draw it into the room through every crack and crevice of doors and windows to feed the flames. And that means draughts. In your winter home be content with a fireplace about three feet in width and two and a half feet high. You can construct such a fireplace along scientifically correct lines so that it will not smoke. Moreover, you will get the maximum amount of heat from it into the room instead of up the chimney.

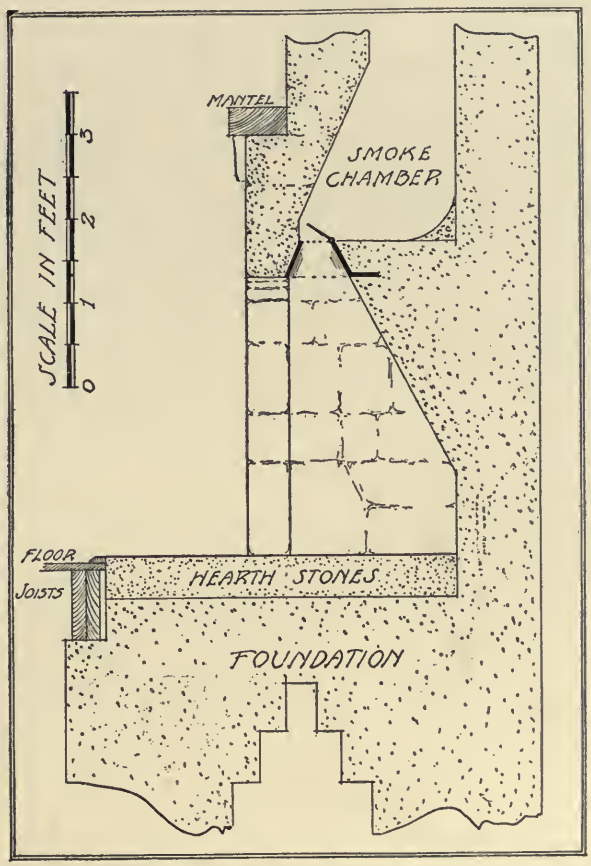


The whole principle of the scientifically correct fireplace is shown by this vertical section through the center. Down-draught and hot air column are indicated by arrows

For the bungalow or summer shack, however, the main desideratum is the cheer of a roaring fire —the fascinating crackle of cordwood. We must have a big fire, even if it does bring draughts and a waste of wood. After looking into the matter of flues and openings, and their mutual relationship we can take up in detail this matter of just how big the bungalow fireplace should be.

There are two great essentials in a good fireplace. One is the relation between the opening into the room and the flue area

—the latter should be one-tenth of the former area; the other is what is called the "smoke chamber," a part that corresponds to the dome on a fire-engine, which is designed to take up and equalize the force of the stream that is pumped intermittently through it. In much the same way the smoke chamber takes up the inequalities of draught and down-draught, and keeps the smoke going steadily up the chimney. A glance at the diagram will make this clear. The brickwork at the top of a fireplace, just above the opening, is drawn forward to form the "throat"—an opening into the smoke chamber three or four inches deep and the full width of the fireplace opening. This throat contains a cast-iron damper, with a hinged lid as shown. The narrowing of the natural exit passage for the smoke and gases causes these latter to pass through under some pressure and therefore with a distinct force. When the fire is first lighted the column of warm air rises at the front of the flue, causing naturally the down-draught of the cold air at the back. If the way were open to it this descending column would



For the fireplace built entirely of stone, heavier walls will of course be necessary, as shown. The iron throat damper is here indicated at the top of an arched opening

A rather unusual type where very rough stone is used throughout the chimney breast, and the mantel is omitted entirely

A very good piece of arch work with large stones and raked-out joints. Notice the shelf of a half-log supported on log pins

reach the fire on the hearth and force the smoke and gases into the room. The "smoke shelf" prevents this, and by its form swirls the cold air around until it is carried into the path of the rapidly ascending warm column and on up the chimney. It is the simplest and most logical thing in the world, yet if you blindly entrust the building of your fireplace to the village mason he will build it any other way but the right one.

Many of the Colonists' fireplaces had cavernous smoke chambers above them, and there was usually a door at the side of the chimney breast through which the hams and bacon went to hang in the smoke until cured. When this function of the chamber was no longer employed the chamber itself gradually disappeared and the flues were made larger and larger in misguided efforts to prevent the fireplace from smoking.

Although the proportion between opening and flue and the

construction of the smoke chamber are the prime essentials, there are other minor details of the fireplace that must be provided for if we are to have the maximum efficiency. The depth of the fire chamber should be one-half the width, and the sides and back should slope so as to reflect the heat out into the room. To secure the proper slope for the sides, make the width of the back two-thirds of the front, letting the sides first run straight back for the width of a brick to save beveling them at the front edge. Allow the back to rise perpendicularly for about a foot before it begins to slope forward towards the throat.

A fireplace can be built without the iron damper, but its presence is a guarantee that the form and size of the throat will be right. Then, too, its front ledge supports the flat-arch brick of the front which without it would require an iron angle-bar.

See that the opening into the flue proper, which latter is best lined with terra-cotta forms made for the purpose, is over the

It is easier to construct a fireplace of brick throughout, and usually more pleasing where the room is small—a stone fireplace shows to best advantage in a very large room

Plan on page 77 (No. 7) *Sylvanus Marston, architect*

One of the living-rooms in the St. Francis Court bungalow community shows an odd form of fireplace. There is a narrow window through the brickwork at the left of the arch opening

center of the fireplace, in order to insure equal draught throughout the fire chamber. From this central point the flue may swerve to either side to take its place beside another flue in the same chimney. It is by no means essential that it rise vertically throughout its extent, but the inside surface of the flue must be smooth and unobstructed.

Let the brick hearth extend sixteen or eighteen inches beyond the opening—the brickwork pattern is a matter of taste. It is supported on a "trimmer arch" or "rowlock arch," as shown in the diagram, sprung between a pair of floor joists and the chimney foundation. See to it that no wooden timbers run through the brick masonry under the hearth or close to the sides of the fire chamber. The heat will eventually set these on fire.

The chimney itself should run a foot or so above any nearby ridge, and it should work without any cowl, whirligig or other tin toy on the top.

Bricks for lining the fire chamber, hearth and smoke chamber should be hard-burned and laid in the best cement mortar. Ordinary lime mortar will not stand the heat of these exposed locations.

Throughout the discussion of a fireplace's essentials in construction the assumption has been that brick would be used. This is by no means necessary, though it is easier, perhaps, and therefore cheaper. A fireplace and chimney of stone, however, is frequently more in harmony with the rough logs or unfinished timbers of the informal bungalow. Or, it may seem desirable to build of cement. In that case wooden forms will have to be built for the full height of the chimney. And as cement or

Exteriors on pages 106, 107; other interiors on pages 131, 167 *Cummings & Howard, architects*

The interior of the hollow-tile bungalow shows a consistent use of the tile throughout, including the chimney. The rafters of rough half-logs are interesting

concrete is not particularly improved by close contact with fire, it may be well to make the opening sufficiently larger than is desired, and then line it with firebrick. The chimney proper, in that case, may be lined with terra-cotta flue-lining.

The use of decorative tiles in conjunction with a fireplace facing of cement offers most interesting possibilities, but the difficulties entering into designing the details of such a feature are not to be lightly undertaken by the amateur; they should be left to the skilled architect.

The diagram on page 139 is intended to show the construction of a stone fireplace having an opening five feet wide and about three and a half feet high, to the top of the arch. For this size opening, in accordance with our rule, the flue should be twelve by eighteen inches. An adjustable throat-damper will be worth far more than it actually costs, here as in the brick

Plan on page 73; exterior page 74 *A. G. Richardson, architect*

Occasionally the location of the fireplace gives an opportunity for the working out of an interesting architectural feature in combination with built-in bookcases. In the very informal structure the simplest sort of shelving will harmonize nicely Books always seem more at home near a fireplace

Exteriors on pages 57, 114, 115; other interior on page 151 *George A. Clark & L. du P. Millar, architects*
In the Childs California home the recessed fireplace is faced with brick set on edge instead of on their sides, as ordinarily found. Usually a flat arch will be found more attractive over the opening, instead of supporting a regular course of bricks or an iron bar as here. The heavy shelf of a redwood beam is supported by corbeling

chimney, in securing a proper conformation of the opening into the smoke chamber.

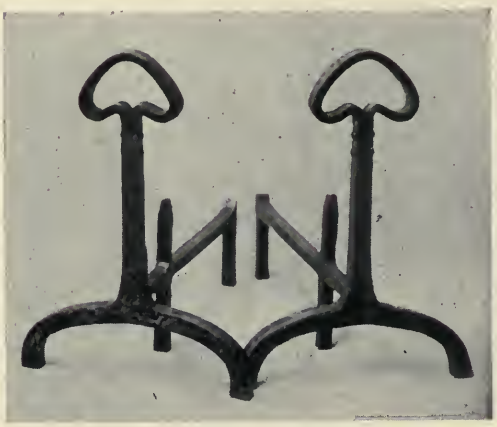
This fireplace is as large as would be desirable in any but the most exceptional circumstances; a smaller one will be advisable if the living-room itself is, let us say, less than eighteen by twenty-five feet.

Do not make the mistake of having an ash-drop in the hearth, nor take out the ashes at all until the accumulation leaves no space for fresh logs. The presence of a glowing mass of embers under and back of the blaze is one of the wood fire's greatest charms. Bury the unconsumed wood each night under the ashes and it will furnish the best kind of a starter to light the next evening's fire.

But what of the fireplace that is already built and is never used because of its misbehavior? There is at least a good chance that it can be remedied. The fireplace expert represents a new

The facing of dark red hand-made tile has been applied over the facing of rough brickwork. The best way to get and keep these tiles most attractive is to rub them occasionally with linseed oil

profession that thrives on the follies and ignorance of past and present builders. Here, however, is something to try first. Many fireplaces smoke for the reason that the flue is too small for the opening. You cannot increase the size of the former but you can easily decrease the latter. Take a pair of thin boards, six inches wide and cut to fit snugly into the opening along its top. Wedge one in at the top, light a fire, and draw the other board down over the outside of the first



There is an opportunity for yourself or your blacksmith in hammering out a rough pair of andirons for the bungalow fireplace

until the opening is reduced sufficiently in area so that its flue can take care of the smoke. Perhaps you will not need even the six inches reduction. When the working combination is found, have a copper or sheet-iron curtain made to replace the boards.

Still another common fault is a throat that is too wide.

The amateur craftsman will have abundant opportunity about the fireplace as well as elsewhere for giving those individual touches that lend distinction

Remedy it by laying across the top of the throat opening an iron plate that can be pulled back and forth, until the throat is the proper size; ordinarily it should be three or four inches.

The subject of fire-tools is deserving of at least a few words. With a rugged stone fireplace you would naturally avoid an equipment of polished brass. With a cement-and-tile treatment the brass tools would be better, but here and with a stone fireplace wrought iron is decidedly the most harmonious material for tools and andirons.

Exterior views on pages 13, 39, 94, 100, 111, 153; other interiors on pages 118, 150, 152

Davis, McGrath & Shepard, architects

The interior of a bungalow may very easily be made or marred by the furniture that is put into it. Above all avoid the cast-offs from the permanent home

Chapter X

Furniture and Furnishings

THE summer home or bungalow is usually very much abused in the matter of its furnishing. Too often it is filled with all the left-over chairs, broken-down couches and disfigured tables that will no longer be tolerated in the permanent home.

Good furniture is never really cheap, but it is surprising how far a small amount of money will go in equipping the bungalow with chairs and tables, provided only that we are willing to use material of the less expensive sort. While nothing seems so thoroughly at home in the bungalow living-room as the sturdy craftsman furniture of brown oak, it is possible to fill out an equipment of this type with other chairs that cost less.

For instance, there is willow, wicker, reed, woven grass, rattan, etc.—a whole family of furniture materials that is now to be found in quiet and comfortable designs. Then, too, there is an opportunity that is far too infrequently seized, in buying unfinished kitchen furniture in pine—that is, without paint or varnish—and staining or painting this to carry out some particular scheme of decoration. You will find it possible, frequently, to secure a sturdy type of kitchen chair without frills of any kind, but well fitted to its work, which, with a coat of brown or green stain, or a few coats of white paint and enamel, will be a

Exteriors on pages 13, 30, 94, 100, 111, 153; other interiors on pages 118, 148, 152

Davis, McGrath & Shepard, architects

There are great possibilities in the use of a device throughout the furnishing and decoration, such as the pine tree that appears here on the backs of the chairs and on the sideboard door panels

This summer home was furnished with pioneer furniture one hundred and fifty years old

revelation. Some of these chairs are made with a fairly wide top cross-piece at the back. What could be more effective in the dining-room than a set of these painted a light green, with a stenciled emblem — conventionalized marigold, golden-rod or something of that sort, stenciled in orange on these wide back pieces? Or, for a bedroom, several such chairs in white enamel, again stenciled with the chosen device, in green and

orange, would be eminently appropriate and effective.

A massive bed of smooth cedar that has been rubbed to a satin finish

It is surprising that many more people do not seize upon this same scheme of using a significant device throughout the interior decoration of the bungalow. It has been employed in several notable homes, always to the delight of owner and visitor alike, but its possibilities have scarcely been opened up. In addition to its employment on furniture, small cupboard

Exteriors on pages 57, 114, 115; interior page 145 *George A. Clark & L. du P. Millar, architects*

The dining-room of the Childs ranch house is furnished in oak furniture that has apparently been designed especially for its location. The built-in china-closets and drawers for linen are added at little expense before the builders leave

Exteriors on pages 13, 39, 94, 100, 111, 153; interiors on pages 118, 148, 150

Davis, McGrath & Shepard, architects

A sort of craftsman furniture of the lighter type has been used to excellent effect with hickory furniture and rag rugs

Exteriors on pages 13, 39, 94, 100, 111
interiors on pages 118, 148 150, 152

Davis, McGrath & Shepard, architects

For the porch furniture hickory makes a durable and effect sort. Rugs for outdoors may be in the more brilliant colorings

doors, the backs of built-in seats and such places on the woodwork, it may be repeated in the hangings, the rugs, the sofa-pillows and in simple cut-out form on wrought-iron hinges, lock escutcheons, lighting fixtures and many other appropriate places of that kind.

Another type of furniture that has especial fitness for the bungalow is the sort that is made of hickory—the young saplings themselves forming the framework, the seats and backs being woven from strips of the tough inside bark. How infinitely better this furniture is than the happily disappearing rustic sorts of the past generation, may be judged from the illustration of the former on this page. And its advantages are found on the side of comfort and durability as well as on the score of appearances.

It is possible, and not only that but most appropriate, to build in as permanent fixtures many of those things that are ordinarily

Porch furniture of the willow or wicker type is also pleasing, and may be stained to carry out any color scheme. The Gloucester hammock at the end of the porch is a modern and welcome innovation

portable, such as the sideboard, bookcases and seats. It will frequently be found far cheaper to have the carpenter build some of these things and also a few tables, while he is at work on the building, than to buy them and pay the freight from a distance. It is surprising what results can be gotten out of some good oak, a few tools, some alcohol stain and wax. Even the merest novice can add not only useful but appropriate pieces of furniture to the bungalow's equipment if he is so disposed. The man who once makes a start in home craftsmanship, particularly along the line of carpentry, will probably never stop. There is a real joy in the smell of the newly cut wood and its gradual transformation under the tools, that never palls.

The addition merely of a few shelves between the studs, with perhaps a hinged lid to make of these a desk, is such an easy matter and at the same time such an aid in furnishing—a drop-leaf table against a side wall of the living-room, a broad shelf to serve as a dressing-table in a bedroom, book-shelves above or

back of the inglenook seats, a hinged lid in one of these same seats affording a place for firewood.

Floor coverings need not bother us very much. Cool mattings are always acceptable, in the bedrooms particularly, and they are to be found on the market each year in an increasingly large number of new materials, new weaves, and better design throughout. Among the less expensive domestic rugs, it is perhaps unnecessary to urge the selection of solid colors and two-toned designs in preference to the designs in greater elaboration and fussiness. The carpet probably will never find a place in the bungalow.

I have felt it necessary to speak a word of warning against the disfigurement of the summer home with cast-off furniture. I must utter the same warning in connection with bric-a-brac and so-called ornaments. If there is one place more than another

A rug of woven grass or some similiar material is a very welcome and durable addition to the porch furnishing; and have a table, by all means, a magazine-rack and chairs that are really "easy"

The low seat at the top of the porch steps is an ingenious piece of porch furniture that is well worthy of emulation

where bright-colored or white-and-gold vases or gilt clocks and such things are unfitting, it is in the bungalow living-room. There will always be needed plenty of good pottery to serve as flower receptacles, a few brass bowls for the same purpose, and very few pictures. There will naturally accumulate a quantity of other knick-knacks which we can only hope will be inoffensive. The point is that the bungalow, whether it be in the living-room, bedroom, dining-room or kitchen, cries out for the simplest possible treatment in ornamentation.

And do not neglect the porch in your furnishing. More and more this important part of the home is coming to be treated as a room rather than as a front step. Its character will demand a certain informality, even more pronounced than that which governs the furniture of the interior. Floor covering it must have, as well as furniture, and surely a number of potted plants or window-boxes set around on the porch rail.

For the porch a domestic rug of coarse but substantial weave would do nicely, or one of the type that is woven from grass

would be eminently serviceable—Orientals are never out of place, but the tracking in of dust and mud upon them is not particularly conducive to their usually long life.

Furniture of the willow or wicker type, or of hickory as mentioned above, always looks well on the porch, provided the design itself is good, and happily the monstrosities in woven furniture are becoming less common every year. Stain it as you like, preferably to match the color of outside woodwork rather than in contrast with it.

Have at least one table on the porch, and more if the size will permit—bearing a few good books, the current magazines and cut flowers from the garden. And do not make the mistake of having the chairs all stiff and straight. The bungalow porch is just as much a place for the genuinely easy chair as the living-room or den. A settle or two, with cushions that one does not have to handle tenderly, will complete the equipment.

Plan on page 33; exterior on page 32

Davis, McGrath & Kiessling, architects

Before the carpenter leaves, the bungalow builder will do well to have him build a substantial table, seat, bookcases and such things. Furnishing is made less expensive in this way and is very often more effective

Chapter XI

Lighting Systems

IF the bungalow is to be used as an all-year-round home the probabilities are that it will be located near enough to a service main of electricity or gas to draw therefrom its supply of light without further thought. When, on the other hand, the building is isolated, even though it is intended to be occupied only during the lighter months, some special provision must be made for the lighting.

For the small shack in the woods, used merely for vacations and week-end visits, it may be thought advisable to put up with the inconvenience of oil lamps. Or, if the bungalow happens to be located on Long Island, there is a more satisfactory source of illumination in a gas that is sold in portable tanks. Compressed to the extent of liquefaction, it becomes readily portable in its special receptacles, which are connected up to a piping system as for ordinary illuminating gas.

Where the former of these possibilities is not acceptable, and the latter not available, recourse for lighting must be had to one of several thoroughly practical systems whereby an independent lighting plant is provided.

In selecting a system there are several important considerations to be kept in mind. In the first place, the cost of installation must not be given too much weight. The initial cost of

installing a thoroughly reliable generator will be distributed over many years, and if one makes his selection solely for the reason that a plant is cheap he may be disappointed in a very short time to discover that it must be torn out to make way for a new one.

The cost of maintenance, of course, includes the fuel that is used, the repairs to machinery, and the labor involved in caring for the plant. With the use of electricity, also, it must be remembered that the lamps will have to be bought from time to time—a comparatively small item.

In a case of a bungalow where not only a lighting problem must be solved but an adequate supply of water must be provided for daily use, it would probably be well to install electricity, for the reason that the same engine used for producing current through the dynamo could be coupled up to a pump for a part of the day and both of these problems solved more economically in that way.

Acetylene Gas

Acetylene gas is coming to be more widely and favorably known through its use in automobile head-lights as well as for lighting the isolated country home. It has the distinction of being the whitest illuminant in general use, more nearly approximating sunlight. The gas is made from calcium carbide, a product resembling crushed granite in appearance and made by melting together in an electric furnace ordinary lime and coke. Until brought into contact with water the carbide is non-combustible and actionless.

An acetylene generator takes the place of the ordinary gas meter that would be had in districts supplied with common illuminating gas through street mains. In this generator the carbide and the water are brought into contact to produce acetylene gas. In some forms the carbide is dropped into the water, in others the water drips upon a pile of carbide, but in all types there are three parts to the generator—the carbide receptacle, the water tank and the gas tank. And in each type there is an automatic device for bringing the carbide and the

water together just fast enough to make the needed amount of gas.

From the generator, which is usually set in the cellar if there is one, or in a small outbuilding if there is not, wrought-iron pipes lead the gas to the various rooms, and the gas is delivered through a special form of burner which consumes about one-half cubic foot per hour—about one-tenth the amount burned at a common illuminating gas outlet.

Calcium carbide costs, delivered, about $4 per 100 lbs., and this amount should make from 400 to 500 cubic feet of gas. A generator of reliable make, with piping, brass fixtures, globes and burners for 35 lights, costs from $200 up, and the cost of producing a 24-candlepower light—the equivalent of one and a half ordinary 16-candlepower electric lamps—is about four-tenths of a cent per hour. West of the Rocky Mountains the increased freight charges on the carbide bring the cost up about 25 per cent.

Electricity

There is no doubt that electricity has a strong hold upon popular favor for lighting purposes. Where a public service supply is not obtainable a plant may be installed in the cellar or an outhouse. It consists of a dynamo, a switchboard and some form of engine to run the former.

A combination consisting of dynamo, gasoline engine, switchboard and all equipment except wiring and installation, costs, in the five-horsepower size, about $850; a ten-horsepower plant about $1100; and a 20-horsepower plant about $1750. A ten-horsepower plant will operate 100 lights, and for every horsepower added, ten more 16-candlepower lamps can be lighted.

Using what is known as 68-degree gasoline, which is even better for the purpose than a more refined grade, and which costs from eight to ten cents a gallon in barrels, the cost per 16-candlepower light per hour is about one-tenth of a cent. This means that every seven to ten old-style carbon incandescent lamps can be operated for an hour for one cent, or it

means that an individual power plant operating one hundred 16-candlepower lights costs ten cents an hour (figuring the gasoline at eight cents per gallon). It is claimed that the Tungsten lamp, which is rapidly replacing the old-style carbon incandescent lamp, is about forty per cent. cheaper in operation.

One advantage of the electric equipment run by a gas or gasoline engine lies in the fact that the engine can be uncoupled from the dynamo and used for pumping water. The five-horsepower engine will pump 3600 gallons 200 feet in height at a cost of five cents per hour.

By installing storage batteries the engine can be run for as long as needed to charge these for a day's supply of current, then shut down.

For small bungalows there are on the market electric generator plants as low as two-horsepower, with switchboard; storage batteries (with a capacity of burning eight 16-candlepower Tungsten lamps—27 volts—for eight hours, or eleven lamps for five hours); fifteen Tungsten lamps, wire and fixtures for a building of, say, 40 x 40 ft. in size, all at a lump sum of $350. With ordinary use this system would need recharging by running its engine and dynamo but once a week through the summer months. A similar plant of double the capacity costs $425.

Gasoline Vapor

Perhaps you have been accustomed to using ordinary illuminating gas in a city home and would prefer to continue to use a similar illuminant, even though there are no public service mains available near your bungalow. The solution of your problem is to install a miniature gas plant in your cellar. Such a plant consists of an air-pump actuated by water pressure, a tank for the storage of air under a fixed pressure, a supply tank of gasoline located underground at a distance from the house, and a carbureter in which the air is forced through an absorbent material holding gasoline, vaporizing the latter and carrying it into the pipe system to be burned at the regular gas outlets. The gas is generated only as it is required,

automatically, and as soon as the fixtures are turned off the surplus gasoline runs back into the supply tank underground.

It is claimed that with this vaporized gasoline system of lighting, a flame of 25-candlepower can be kept burning forty hours at a cost of five cents. A house containing from ten to fifteen rooms would require, say, twenty-five lights, which could be adequately supplied by a plant costing about $200 to install.

Chapter XII

Water Supply

THE relative position of this chapter among its fellows in the book is in no sense an indication of the relative importance of the subject-matter contained herein. If that were the test we should put Water Supply first, for where there is not an unfailing supply of good water there can be no bungalow.

If your bungalow site is not near enough to a city or town water-main to tap it, there are three other ways of securing your supply. If there is a brook nearby but below you, the source and previous course of which is above suspicion, you can insert a water-ram in the current and have it pump, automatically, a supply into a tank, using the power in the flow of a large quantity of water to lift a comparatively small portion of it.

Or, you may dig a well, forcing a 4-inch or 6-inch pipe into the ground by an apparatus resembling pile-driving machinery. A plunger takes out the sand, gravel or mud as the pipe goes deeper and deeper into the earth. Of course it is impossible to foretell the depth at which water will be found, or whether the expense of well-digging may not turn out to be greater than the cost of the site itself. A fairly definite assurance of success or failure may be had in the results of other well-digging in the neighborhood. Even that is not a dependable basis for close estimating, for the

The windmill is usually passed over as a possibility for water supply on account of its unsightliness. In this example, however, the designer has incorporated it rather ingeniously with the design of the whole building

water-bearing stratum may not be horizontal. For this reason it would be a mistake to ask a well-digger to give a lump-sum bid for securing an adequate supply of water; to cover the uncertainty of his task he is sure to bid high. Instead of demanding a definite lump-sum bid, have him give a bid per foot of depth, with a necessarily higher rate for drilling through any rock strata that may be encountered.

The procedure in well-digging consists in driving the pipe down until a water-bearing stratum is reached. A test is then made for quantity. A barrel of, say, fifty gallons capacity, is filled by a power pump, the speed of the latter and the time required to fill the barrel being recorded. The pump is then kept running for twenty-four hours, after which the barrel-filling test is repeated, with the pump set at the same speed. If there is no appreciable falling off in the supply, it is considered adequate; if the supply has failed in the operation, the pipe is driven deeper. If the quantity test has been met, a quality test by a chemist will be advisable before the problem may be considered solved.

The third way in which you may secure a supply is to depend for the main bulk of the water used for washing on a cistern

The kitchen boiler in this little bungalow was placed on the other side of the kitchen partition, bringing it into the bathroom, which room it serves to heat

supplied by rain water from the roof. It must be remembered in that case that a shingle roof must not be creosoted. This use of rain water would be advisable only when there is an unfailing spring nearby, from which it seems practicable to carry the amount of water that is needed for drinking. Frequently, however, where there is a spring that is at all adequate, you will have enough of a stream running from it to apply the first method mentioned —the use of a ram.

If a well has been driven there are three ways of pumping the water from it for the supply—the old-fashioned windmill, which is probably too apt to fail us at the most inopportune moment, for the reason that in the driest weather the winds are usually least active; or one of the many forms of power pumps may be used, driven by a gasoline engine, electric motor, hot air engine, etc.; or by means of a hand-pump. It will be a matter of economy, where provision has to be made for both lighting and pumping water, to use the same engine for both purposes, connecting it up with the dynamo for electric current and with the pump for the water supply. By running each for a short time every day the attention required is very small.

Simpler than a power pump, as well as less expensive to install, is the double-acting hand-pump that may be installed in the kitchen itself, as indicated in the accompanying illustration.

An equipment of this kind, which costs but about ten dollars, has a cut-off valve, by means of which water may be pumped directly through the sink faucet, for drinking purposes, or into a gravity tank in the attic to supply the system under ordinary conditions. It will be necessary to have some sort of tank for the water supply: either a gravity tank in the attic, for which, by the way, the floor beams must be made additionally strong, or one of the modern pressure tanks in the cellar or in an outbuilding.

The principle of the latter is this: the water held in the tank is under air pressure, secured usually by pumping air in, although occasionally by pumping the water into the tank, compressing what air there is in it. There are several manufacturers who

Exteriors on pages 106, 107; other interiors on pages 131, 143 *Cummings & Howard, architects*

The simplest of all types of water supply where a well has been driven is the hand-pump beside the kitchen sink. A cut-off valve permits the pumping of drinking water without sending it through the tank

make complete equipments for the water supply, including the well-pump, the gasoline engine to run it and the pressure tank.

There is just one word of caution that might be added. Where the bungalow is occupied the year around, an electric motor undoubtedly makes a more dependable source of power for the pump, for the reason that there will be no trouble with it, such as occasionally occurs with an internal combustion engine, due to the freezing of water in the cooling-jacket. Without an electric service main, however, there is no choice; and if the bungalow is occupied only in the summer this trouble will not present itself.

There is no need to go into the subject of plumbing fixtures for the bungalow, for these need vary in no way from those for the permanent home.

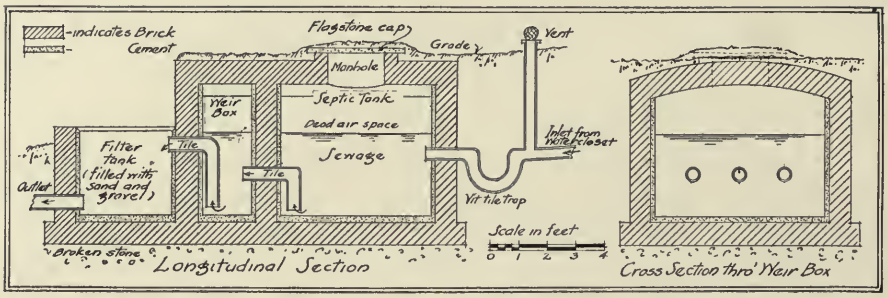
Chapter XIII

Sewage Disposal

ALMOST of equal importance with the water supply will be the problem of sewage disposal for the bungalow where it is not possible to secure entrance to a community drain. Until very recently the difficulties of this problem were such as to deter a great many people who had a desire to live in the country from getting out of touch with city conveniences.

At the present time, however, there is no difficulty whatever in constructing a sewage disposal plant for the individual bungalow that will not only be effective in doing the work for which it is intended, but which will do this automatically for an indefinite time without any attention whatever.

The system requires the construction of an underground tank of masonry—preferably of concrete. The tank should be located on the side of a hill, where possible, in order that the water which comes from it will flow in a direction away from the house. The diagram will indicate just how this modern type of sewage disposal tank, known as a septic tank, should be constructed. There are a number of patterns of the septic tank, most of which depend upon some patented gate-valve, siphon or other device for operation. The diagram shows a tank that will provide the essential requirements without any of the



The whole problem of sewage disposal for the isolated country home of any kind is very easily solved by the construction of a septic tank a short distance away from and below the house

delicate mechanism of this kind, which is almost certain to get out of order and render the tank useless.

The action accomplished by the tank consists in the conversion of sewage, both solids and liquids, into pure water through self-destruction—a bacterial action that is carried on in an air-tight and light-proof enclosure.

Being lighter than water, the sewage rises to the surface as it enters the tank through the main tile drain from the bungalow. In the absence of air and light in the upper portion of the first chamber, the bacteria increase at an enormous rate and accomplish the complete decomposition of the sewage into liquid form within twenty-four hours. From the bottom of the first tank the liquid is siphoned over into what is called the weir box, designed mainly to prevent the agitation of the water during its transformation. From thence it is re-siphoned into a filter bed of sand and charcoal, from which it finally flows as pure as spring water.

It is essential that the first tank, or septic tank proper, should be built large enough to contain the accumulated drainage covering a period of forty-eight hours, in addition to enough water at the start to cover the inlet. A tank four feet deep, six feet wide and eight feet long, or containing approximately two hundred cubic feet, will be sufficiently large under ordinary circumstances for a family of eight or ten persons, provided the bath water and that from the kitchen sink is not run into it.

Diverting the bath and kitchen sink water will save expense in the construction of a larger tank. It would be advisable to use, in connection with the drain from bath and kitchen sink, a grease trap, which requires cleaning at intervals. From this the water may be led in a tile drain to irrigate the garden, if desired.

While the septic tank will never, except under most extraordinary conditions, require cleaning or attention in any way, it may be advisable to cover the top with matched planking, made perfectly tight; or, if it is desired to make the tank throughout of concrete or brick, a manhole may be left in the top. In either case the top of the whole system may be covered with earth, so that to all appearances the final outlet is merely an outlet for surplus water from the hillside above.

It should need no further argument to convince the bungalow builder that dependence upon any one of the old sewage disposal methods, in common use until recent years, would be mere folly. At best they were germ breeders of the worst type, not to mention the continuous expense involved in cleaning them and keeping them in working order.

Plan on page 71; other exterior on page 186

The Girouard bungalow at Altadena has been established in its site long enough to become adopted by Nature. Building a bungalow structure is not enough; the planting will make it

Chapter XIV

Planting

TOO often the bungalow or temporary summer home is never given a setting of flowers, vines and shrubs that would make it seem at home in its site The owner excuses his neglect of planting by reason of the fact that he goes out to the summer home as late as June, when it seems hardly worth while planting anything, even if that were not too late to get things well started.

The solution of this problem lies in fall planting—the best season of the year to set out most of the hardy perennials, shrubs and bulbs. Once planted, the majority of these need no further attention, with the exception of dividing the clumps when these grow too large. Following that plan alone would mean plenty of bloom next year, but it would not help the appearance of the bungalow this summer. The latter problem may be easily solved also, and it may be well to take that up first.

First and most important among the elements which will give the desired effects in the shortest possible time is the gladiolus. The bulbs are tender; that is, they must be set each spring—at any time from May first to July first By making several plantings, say two weeks apart, beginning May fifteenth or June first, a continuous bloom may be had from early in July until late in September. The bulbs must be taken up after the foliage

For quick results in planting use gladiolus bulbs, setting them out in successive plantings two weeks apart from May 1st to July 1st; and do not fail to set out the rapid-growing vines as soon as the builders leave

has turned yellow, and dried for planting out again the following year. To anyone who has not seen the recent improvements in gladioli, the variety and beauty of this flower, particularly for cutting, will be a welcome surprise.

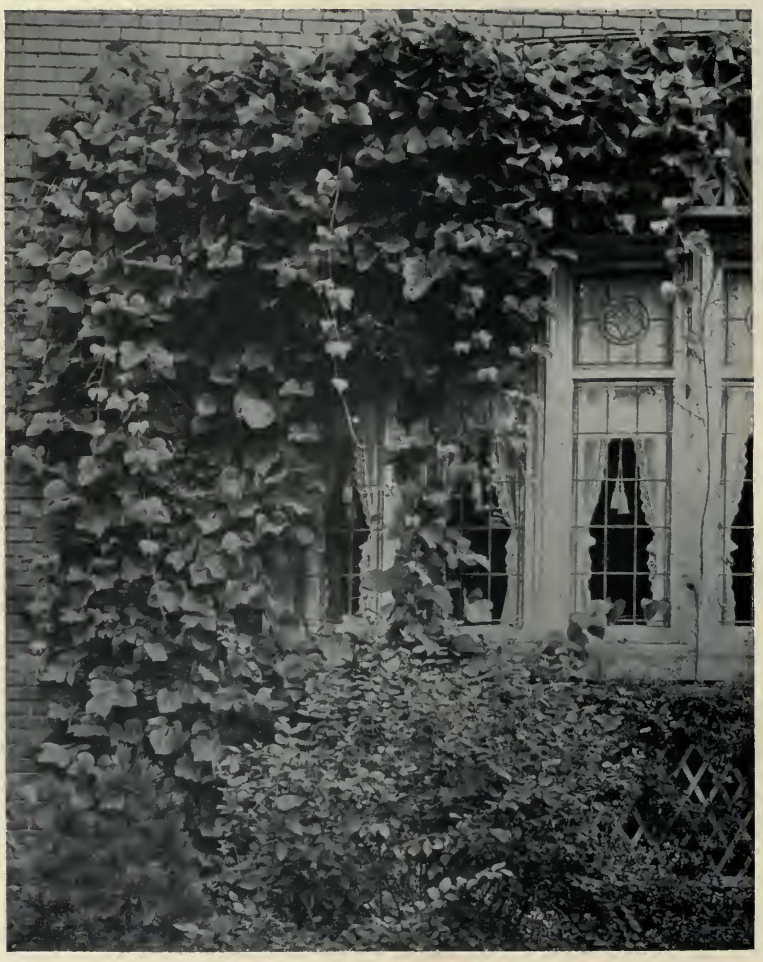
Let me add just a word of caution in regard to the planting

Petunias will thrive in almost any soil and make a splendid showing at once. It is possible to buy plants from the florist for effect the first season

of these bulbs. Almost everybody but an expert will fail to plant them deep enough. The bulb's first step after being put in the ground is to form a new growth on top of the old one, and from this the roots start. Shallow planting, therefore, leaves the root system so near the surface of the soil that the weight of the heavy stalk soon topples it over. Plant the bulbs about five inches deep, and you will probably find the customary staking an unnecessary precaution.

Additional bloom for this first season may be had by purchasing plants of the petunia, snapdragon, verbena and Japanese anemone. Petunias thrive in practically any soil; snapdragon keeps everlastingly at its work of producing flowers from the middle of June until the fall frosts; verbenas come into bloom about July first, and continue until frost; and the anemones will brighten September and early October.

Vines are probably the most readily available of all the growing things to serve in blending harmoniously together the work of man and that of Nature. They may be purchased from a



The Kudzu vine is a remarkably rapid grower from Japan, often attaining a height of fifty feet in a single season

florist or nurseryman, in pots, and planted at any time from spring until fall. It will be found advisable, then, to start at once the ones that will be the permanent features of the place—English ivy for the shady side of the building, and Boston ivy,

let us say, for the sunny side. While these are making their comparatively slow growth, a temporary covering for the trellises or walls may be started—the common but never commonplace morning-glory, the Virginia Creeper and perhaps that marvelously rapid grower from Japan—the Kudzu vine

Plant snowdrops for March—the first sign of life about the bungalow in the spring

As to the problem of next year's bloom — as well as that for the years to come, I am going to assume that the owner of a bungalow wants to secure a maximum of effect with a minimum of labor. No doubt there will be many exceptions to this indiscriminate characterization, but the man who is a garden enthusiast or a specialist along some particular gardening line will not be likely to look for suggestions here.

It sounds decidedly paradoxical, does it not, to affirm that the man who has the least amount of spare time to spend upon the appearance of his bungalow surroundings may have the very best that the horticultural world offers? It really sounds too good to be true; yet that is what I am going to try to show.

I shall never forget the feeling of utter, hopeless ignorance that swept over me when my eyes were first opened to the beauty, my understanding to the joy, that a garden offers. As I pored over book and magazine, seedmen's catalogues and planting tables, there gradually came a realization of the immensity—the real awe-inspiring depth, of the subject. The terms, "annual," "perennial," "herbaceous shrub," "mulch" and "scale,"

For April's bloom you should have forsythia or golden bells—one of the first shrubs to bloom

For May nothing is more effective than the German iris, if planted in generous masses

meant as little to me as did the portentious Latin names of genera and variety. At the mere thought that any mind could ever grasp all the details of nomenclature, the manner of plants' growth, their respective heights, time and length of bloom, color, requirements of soil, light, shade and moisture, sowing, transplanting, pruning and fertilizing—at the mere thought that a single mind must be able to coördinate all these and many other facts before planning a garden that would give continuous and harmonious bloom, my reason fairly tottered. Nor does the problem seem much easier on closer acquaintance. The really successful "garden," as we understand the term—a garden of some extent, in which are found at least the main representatives of the floral kingdom, arranged in close and always harmonious relationship, is never achieved in a day. Only year after year of tireless experimenting, with adherence to a single general plan for the whole, will bring at last a fair

approximation of the ideal—never the goal itself.

But how, then, is the man with little time to spare, going to achieve even a reasonable measure of success in the setting for his summer home? In a word, he will achieve it by planting generous masses of only a few things, and those the real giants of the garden—the "stars" of the garden stage.

Also in May will bloom that dazzling shrub, Van Houtte's spirea

Did you ever stop to think that every month from early spring through the autumn brings at least one flowering plant that stands supreme among its fellows—the peony of June, the hardy chrysanthemum of November, for instance? But mere superiority of appearance will not be enough as the test for those plants that will bring success to our bungalow garden. We must have only those things that need little or no care, that are highly resistant to the army of garden pests. And we

The peony—a plant almost without an enemy—should rule June; if you have time for their care, add roses

Let a row of stately hollyhocks dominate the garden in July

shall prefer a variety of form, so that all shall not be border flowers, or vines.

What we do want, then, is a steady succession of the really big garden features—a variety of them, resistant to disease, and each fully capable of occupying the whole stage at the height of its glory. And if they are to do this in a really satisfying way we must plant generous masses of each. A plant or two, or a shrub or two, from among those we select will make but a feeble showing. Each must seize the stage in its turn with a blare of trumpets—and hold it for its appointed time. Whether there is to be one large group of each selection, or several groups at different points throughout the garden, is a matter to be determined by the plan of your own particular place. Only let there be not the slightest doubt, at any time, as to which particular star is holding the stage.

Well, let us get at this matter of selecting those things that are to reign, each in its turn. I have no doubt that you will disagree with me on many of these; but do not, I beg of you, discard the principle of the thing if your gardening knowledge is small and your gardening time very limited; substitute other plants or shrubs or vines, if you will—this is but a personal choice.

For the very first flower of March, I nominate the snowdrop—the common old-fashioned sort that bears the weighty name of *Galanthus nivalis*. It is the first sign of awakening Nature, appearing often beside patches of snow—the most inspiring,

ethereal, delicate white flower imaginable. Plant the bulbs in the fall, scattered over a patch of lawn that is partially shaded—preferably by dusky evergreens. Plant several hundred of the tiny bulbs, at least. The flower is so small that it simply must have the reinforcement of plenty of its fellows—and they cost but a dollar a hundred. Once set, they may be forgotten—until they overwhelm you with their charming message that spring has returned.

Hiawatha, a sturdy climbing rose for July bloom—the petals are crimson to white with yellow anthers

For April's share in the pageant of bloom let me recommend the forsythia or golden bells. You know the shrub—the first and one of the very few yellow-flowering ones. Its drooping branches burst into a mass of gold from base to tip before the trees really get under way in their leaf-making. The variety *Forsythia Fortunei* is probably the best. Plant several masses of the shrubs in the background of your border; their foliage will set off the flowers that come later. Here again the groups, once planted, preferably in the fall, need no further attention for years to come.

Call me inconsistent if you will, but I am going to name two stars to rule May. My plea is that the time has come when we must have a border flower coming into the limelight—we have had bulbs and shrubs; and yet we need more of the foliage-producing element to form backgrounds for later effects, and to give that air of solidity and permanence to the garden that shrubs do give. So it is to be the German iris—in mass once more, and that most dazzling of shrubs, the *Spiræa Van Houttei.*

I shall leave the choice of colorings in the iris to your own taste; there are varieties in white, pink, deep purple, lavender and yellow, with almost innumerable combinations of these. Whatever you choose, plant plenty of white, to set the other colors off to best advantage. The spireas will need no attention after the first planting in a large, deeply worked location. After setting out the irises, in early fall, all they will require will be an occasional division of the clumps as these grow too big. In

Nothing compares with the hardy hydrangea for bloom from August well into winter. The great heads of bloom, cut after frost has turned them pink, will last indoors, dry, for a year

dividing, do not make the clumps too small, or you will lose a season of bloom.

So we come to June—the queen of all the months in the garden, and what a wealth of material it brings us from which to choose! At the risk—rather, upon the certainty—of being branded a heretic, I am going to pass by the rose and advise you to give June over to the peony. I have no prejudice against the rose, but its smaller enemies in the animal kingdom certainly have, if we may judge by the viciousness of their attacks upon it. What with the rose-bug and the mildew and the blackspot and the greenfly and the scale and the slug, the "queen of flowers" would give our summer home owner troublesome times in prolonging her reign. The peony, on the other hand, does not seem to have an enemy in the world. Up come its deep red

shoots with the spring-flowering bulbs, and they bring in June a wealth of bloom that truly is incomparable. All the peony asks is to be well fed. Set out the dormant roots in the fall, and the only labor to follow is an annual rich mulch of manure in November, an application or two of liquid manure as a stimulant when the flowering begins, and every three years or so a division of the clumps. Here again, I shall leave the selection of colors and types of flowers to your own good judgment. Just a word of caution, though: Choose largely from the good old tried-and-true sorts; there are magnificent new varieties constantly being put forth, but many of them are only different from, not better than, the thoroughly fixed varieties.

Speciosum lilies may well form the background of the garden display in August, with a few Auratums, the beautiful lily of Japan

For July I would suggest hollyhocks—a stately row of them nodding in at the windows, preferably along the sunny side of the house. Do not neglect the old-fashioned single-flowered varieties—in pale pink, yellow and red—in favor of the newer double sorts, though some of the latter will add to the interest of the showing. Hollyhocks are supposed to be biennials—that is, the plants from seed sown one fall will bloom only in the second summer to follow. As a matter of fact though, the plants continue to bloom usually for several years after that, and as the seeds sow themselves you will never lack for thrifty young bloomers, provided only that the soil in which they grow is really deep—three feet of loose loam if possible. And with

the hollyhock, to add to my inconsistency, and at the same time throw a sop to the man who refuses to live without some sort of a rose, I would brighten July with one of the hardy climbing roses—by preference a hybrid of the good old Memorial or *Rosa Wichuraiana.* There are plenty from which to choose—Hiawatha (see illustration), a charming combination of ruby-

Let the phloxes rule October—the later-flowering sorts, with plenty of white masses to set off the pinks and reds

crimson and white with yellow anthers; the well known Dorothy Perkins, a pink double; Gardenia, a yellowish white double; Tausendschön, pink double; Lady Gay, shell-pink double in clusters, and others. And there is another reason for adding a climbing rose to our list: it will help to blend the bungalow with its site more satisfactorily than shrubs alone or border flowers alone, or the two together.

For August the lily would be my choice. It brings to the list a new note in its stateliness and purity. And *Lilium speciosum,* it seems to me, should form the backbone of the display. The *Auratum* lily, from Japan, blooms at about the same time, and is considered by many to be the most beautiful of all the family, but it is apt to die out after about three years, so it is well to plant only a few bulbs of it with the speciosums. With the lily will come into bloom one of the finest shrubs that we have—the hardy hydrangea, and it must be added to our list

to carry on into the fall the burden of bloom. The great heads of white turn pink with the cool weather and if cut off after the first severe frosts, they will hold their color throughout the winter indoors. Put a large bunch of them in a brass bowl on some high shelf or other out-of-the way place. Severe pruning in the late fall or winter is all that the hydrangea needs; the bloom is borne on the new wood each season.

The dahlia is unquestionably the reigning flower of September

The dahlia is the reigning star of the September garden, and if you have not recently seen the amazing variety of form and color in which it is now obtainable, there is a rare treat in store for you. It alone of the list will need annual planting; each fall, late, the bulbs will have to be taken up, hung in a dry place indoors to ripen, and set out again in May. The best way to choose the varieties you want is to visit a dahlia exhibition in the fall, or note the ones that appeal to you in some other garden.

In October the late varieties of phlox are fully able to keep up the high standard of attractions that your all-star garden has set. Avoid the pale purple shades in favor of pinks, cherry reds and plenty of white. Jeanne d'Arc is one of the best white late-flowering varieties. In choosing other colors take the late-flowering ones in order that the showing may not rival that of the July and August stars.

Late in October and during the first half of November the choice of attractions is decidedly limited, but the hardy

Plan on page 71; other exterior on page 72

Another view of the Girouard bungalow in its luxuriant setting of vines and flower borders. A rose garden is planted in the immediate foreground

chrysanthemum fortunately gives us a variety and beauty of bloom that needs no apologies whatever. Here again I would advise a choice from the wealth of varieties shown each year at one of the fall exhibitions. The names alone mean little or nothing. Order plants to be delivered May first. Once set in place they will need no further attention.

With the suggestion that the bungalow owner plant a few shrubs for winter cheer—the sumach and the barberry, for instance, I will leave him to his exceedingly light labors and his most abundant rewards. He may be planning to use his bungalow home for but a few months in the year; in that case he may feel that some of the early spring and winter attractions may be omitted. Keeping in mind our obligations to neighbors and even to the casual passer-by, and incidentally the occasional

The many varieties of the hardy chrysanthemum will brighten the garden in October and early November

For the temporary home you can have, at least, flowering plants in boxes set around the porch railing

week-end visits to the bungalow at odd times, the chances are that the carrying out of our whole planting scheme, as outlined, will not result in an alarming waste of beauty.

A very simple clapboarded bungalow in its typically luxuriant California setting. We cannot all have rose hedges, but we can do at least something towards blending our summer homes with their surroundings

INDEX

Acetylene gas, 160
Adirondack lodge type, 37
Andirons, 146
Anemone, Japanese, 175
Architect, need for, 55
Asbestos shingles, 109
Ash-drop, 145

Battens for outside walls, 95
Battened boards for exterior walls, 95
Battened boards for interior finish, 122, 123
Barberry, 187
Bedrooms, 118, 131
Bedrooms, interior finish for, 122
Bedstead, cedar, 151
Bookcases, built-in, 144
Boston Ivy, 176
Brick piers, 90
Built-in furniture, 153
Bungalow, meaning of the term, 5
Burlap, 121, 123

Calcium carbide, 161
Camps, 35, 73
Casement windows, 121
Caulking slab walls, 107
Ceilings, 129
Central living-room type, 66
"Chicago School" type, 41
Chimney, 137
Chimney, height of, 142
Chrysanthemums, hardy, 187
Cistern for rain water, 166
Clapboards for walls, 103
Clinker brick, 20
Community of bungalows, 23, 77
Compo-board, 15
Concrete, cost of, 89
Concrete, formulæ for mixing, 89
Concrete piers, 88
Cost, in general, 7, 63
Cost of log walls, 103
Creosote stains 114

Dahlia, 185
Design of mountain bungalow, 55
Design of seacoast bungalow, 38, 47
Design of woods bungalow, 54
Dining-porch, 85
Dining-rooms, 125, 129, 133, 151
Door-frames, 120
Doors, stock, for interior walls, 128
Dormitory in second story, 73, 80, 81
Drainage, 169
Drop-siding for walls, 98

Electricity, 161
Enclosed porch, 122
English Ivy, 176
Environment, harmony with, 62
Expense of the one-story plan, 7, 63

Fad, bungalow as a, 20
Fireplace, the, 135
Fireplace, diagram for brick, 138
Fireplace, diagram for stone, 139
Fireplace flue, 136
Fireplaces, 7, 16, 134, 136, 140, 142, 143, 144, 145, 146, 147
Fireplaces, remedying faulty, 145

Fire-tools, 147
Floor boards, 132
Floor coverings, 154
Floor coverings for porch, 156
Floor joists, ventilation of, 93
Forsythia, 178, 181
Foundations, 17, 58, 87
Foundations in clay, 87
Foundations in sand, 49
Foundation piers, concrete, 88
Furniture and furnishing, 149
Furniture, built-in, 153
Furniture, home-made, 154
Furniture of hickory, 153
Furniture of willow, wicker, etc., 149, 157

Gas in portable tanks, 159
Gasoline vapor for lighting, 162
German Iris, 178, 181
Gladiolus, 173, 174
Gravity tank for water supply, 167
Gutters, roof, 116

Hearth, construction of, 142
Hemlock boards for walls, 95
Hollyhocks, 180, 183
Home-made furniture, 154
Horizontal boards for exterior walls, 98
House along bungalow lines, 43
Hydrangea, 182, 184

Indian bungalow, 5
Inside finish, 14
Interior finish, 117
Iris, German, 178, 181
Ivy, Boston, 176
Ivy, English, 176

Japanese Anemone, 175
Java mats for wall coverings, 124

Kitchen, 167
Kudzu vine, 176, 177

Latticework between piers, 93
Lighting, planning for, 51, 56, 65, 79, 80, 84
Lighting systems, 159
Lilies, auratum, 184
Lilies, speciosum, 183, 184
Living-rooms, 6, 112, 119, 120, 126, 127, 128, 130, 132, 144, 145, 146, 148, 150, 152, 158
Locust posts for foundation piers, 90
Log walls, trouble from borers, 103
Logs for walls, 11, 99

Mantels, 135
Materials for hillside bungalow, 60
Materials for interior walls, 117
Materials for roof, 109
Materials for walls, 11, 95
Materials for woods bungalow, 54
Mattings, 154
Morning-glory, 177
Mountain bungalows, 55
Mountain bungalows, color, 61
Mountain bungalows, general form, 56
North Carolina pine ceiling, 122

Oak paneling for walls, 128
Ornaments, 155

Patio bungalow, 25, 68, 69, 70
Peonies, 179, 182
Permanent home type, 41
Petunias, 175
Phlox, 184, 185
Piazza, 10
Plan for narrow lot, 70, 72, 73, 74
Planning, 9, 63
Planting, 173

Plaster-board for interior finish, 123
Plumbing fixtures, 168
Porch, enclosed, 122
Porch, furnishing the, 156
Porches, 153, 154, 156, 187
Portable bungalows, 33, 75, 78, 79.
Pressure tank for water supply, 167
Pumps, 166, 167

Rain water, collecting, 114
Rentals, 25
Rest Houses, 5
Roof, necessity for simple, 81
Roofing materials, 109
Rose, climbing, Hiawatha, 181
Roses, 179, 182
Roses, climbing, 184
Rugs, 155
Rugs for porch, 156

Screened porch, 81
Screens for windows, 121
Seacoast bungalow type, 38, 47
Septic tank, 169
Septic tank, diagram of, 170
Service quarters, isolation of, 64
Sewage disposal, 169
Shingle-laths, 110
Shingle roofing, 110
Shingle roof, life of a, 111
Shingle roofs, inside appearance, 131
Shingle stains, 113
Shingles for walls, 98
Slabs for interior finish, 125
Slabs for walls, 13, 105
Slate roofing, 109
Sleeping-porch, 81
Snapdragon, 175
Snowdrops, 177, 180
Spanish Mission type, 68, 69
Spirea, Van Houtte's, 179, 182
Square plan inexpensive, 65
Stenciling furniture, 150
Stone piers, 90
Storage batteries for lighting, 162
Sumach, 187
Summer-house, 37
Swiss châlet type, 29, 56

Tent-houses, 31
Test for bungalow classification, 45
Tin roofing, 109
Trees, 51
Types of bungalows, 19

Ventilation, air space for, 7
Verbena, 175
Virginia Creeper, 177
Vistas in planning, 66
V-jointed ceiling boards, 122

Wainscoting, 122
Wall coverings, 121, 123, 124, 128, 129
Wall materials, exterior, 95
Water supply, 160, 164
Well-digging, 164
Windmill, 165, 166
Window-frames, 120

NA8310
S3
1911

AXJE
AJIR